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Health for Three-Thirds of the Nation*

EDWARD S. GODFREY, JR., M.D., F.A.P.H.A.

President, American Public Health Association; State Commissioner of Health, Albany, N. Y.

THE choice of my subject this evening has been motivated primarily by the stress given at the National Health Conference of 1938 to the plight of that one-third of our nation which is attempting to exist on an average family income too small to provide the food, clothing, shelter, and medical care needed for the maintenance of health. It is motivated further by the tendency of later public discussion of medical care to center about this lowest economic group and the marginal group just above. It is motivated by this tendency to confuse the health service which was designed to serve the public as a whole, with other services designed to benefit only certain economic and occupational groups; by the tendency to confuse public health medicine with relief medicine, including under this term the various types of sickness insurance that have been proposed.

It is, of course, one of the teachings of public health administration that the health department should apply its efforts where the need is greatest and most immediate and where the returns are greatest in life saving and sickness saving. It does not follow, however, that legislation for health should be addressed to segments of the population, classified according to income or occupation. Certainly, there is a grave danger to both the quality and the quantity of the services for the health of the entire people, when public health work is associated administratively with agencies dealing exclusively with low income groups of the population. Public health is something which should grow. Agencies for relief are something that should disappear.

The effects of immediate medical relief are tangible; of prevention, intangible. The former has a strong emotional appeal. The latter is rarely well appreciated, even by those whom it benefits most. The former commonly has first call on the taxpayer and the contributor to philanthropy. Its demands for medical care run into hundreds of millions of dollars annually. The public costs and the private costs of

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medical relief are many, many times greater than the funds spent by taxpayers and philanthropy for preventive health services.

The public has become used to spending—not only in recent years—on this scale for medical relief. Hence it is that in any competition for appropriations, prevention nearly always gives way to relief. The comparatively little more money needed to convert relief medicine into public health medicine is not obtained unless there is continuous and insistent pressure for it.

Medical relief, with rare exceptions, looks not to what lay back of the immediate difficulty, nor to what lies ahead for the individual or the family concerned, but deals solely with the immediate problem of the care of a sick or injured individual. This is as true of private practice as of public or quasi-public practice. Concentration of attention on the cost of medical care and relief from its burden is likely—to use a phrase of President Roosevelt's—merely to stimulate further "bailing of the boat, rather than calking of the seams."

The only safeguard that would seem to insure continuance of a dynamic public health movement, and to insure that any governmental expansion of medical services has the improvement of public health as its primary objective, is to place the administration of any such expansion squarely upon the shoulders of departments of health—national, state, city, and county. When this is done, these health departments must of course, be given the necessary increase in moral and material support that will enable them to deliver public health medicine and not merely relief medicine. Given this, they should be held responsible for results and must not evade that responsibility.

Health authorities should have increasing opportunity as soon as possible to acquire experience in the delivery of medical care. When given the opportunity, it should be developed along public health lines, bringing all the necessary available forces of the health department into play. By this I mean, not only giving the best possible in diagnosis and treatment, but also in looking for the causes of disease or accident and in correcting them if possible; in looking for further opportunities for preventive services in the home and among the family. It is this kind of medicine that I mean when I speak of public health medicine.

Let it be recognized clearly, however, that there remain many immediate services in the field of prevention that should be supplied. There are many imperfections of organization in the national, state, and local health services for their present duties and functions that can and should be corrected. Perhaps we might better examine some of these before calling attention to the imperfections elsewhere.

In the national government, the division and dispersion of health functions among the Public Health Service, the Children's Bureau, the Bureau of the Census, and the Food and Drug Administration are so well known to state health administrators that I shall not comment. They are all agencies with which state health departments have to deal. The recent transfer of the Public Health Service to the Social Security Administration did nothing to simplify this confusion nor to coördinate these functions.

The proposals of the Wagner bill (S. 1620) did nothing to correct them. In fact, its proposal to place the administration of any federal aid for medical care, and hospital and health center construction under the Social Security Board only added to the complexities. The proposal to have the Department of Labor administer federal aid for industrial hygiene, if adopted, would cap a climax of chaos. It remains to be

seen whether groups with special interest in one or another special phase of public health are sufficiently broad in their concepts and clear in their desire for health for everyone to aid in producing an inclusive national health program under a single authority at the national level.

At the state level, we find such a variety of divided authorities dealing with health matters that it is difficult to devise a classification. In one state, the health department is not even responsible for the collection of vital statistics. In certain states, there are separate agencies for crippled children. Food, drug, and cosmetic control finds a place in fewer than half the state health departments; school medical inspection is supervised by the state education department in a number of states; industrial hygiene is a function of labor departments in 2 of the 25 states that make any provision for this important work. With few exceptions, even the services provided by states for the control of tuberculosis are not concentrated in the state health department, and too often any state program adjusted to the importance of this disease is altogether lacking.

To bring these deficiencies of health organization, public and private, down to the local level would merely add to the picture of confusion and emphasize further the deficiencies of functional services. Some voluntary organizations, for instance, interested in particular phases of public health, are performing duties properly belonging to the local health department. Too often they continue to perform these functions while doing little or nothing to build the health department up to a point where it is capable of administering the function effectively. The fault, no doubt, lies as often with the health department as with the agency.

Let me make it clear that this criticism does not refer to the philanthropic organization that provides for a demonstration that operates through a government agency, which serves notice that it will get out at a certain time and, when that time arrives, gets out. Such agencies are looking to the upbuilding of useful governmental functions, *by government*. They are not designed as mere palliatives for social ulcers, which an immature political government may be incapable of recognizing or treating, until it has been shown how to do it.

Nor does it refer to those agencies which aid and promote the proper development of public health authorities by building up public opinion for their support and organizing the interest of citizens for effective action through education. As permanent auxiliaries, they are probably of even greater importance than the "demonstrating" agency.

Perhaps it will be thought that I unduly emphasize the importance of proper organization. I think not. Sound organization means economy and efficiency. Lack of it means waste and inefficiency—waste and inefficiency, not only in expenditure, but in the competition to obtain funds. It means waste and inefficiency in overhead, in duplicating and overlapping services, waste in the effort to fill the gaps between doubtful borders.

The deficiencies of existing public health services are not things we health officers want to hide from the public. We want the public to know them and to correct them. We need better, more specially educated personnel, more facilities and better organization. Though the triumphs of public health have been many, reiteration of them is likely to lead to the impression that the job has been done. There are those who believe that public health work should be limited to sanitation of the environment, and to the control of communicable diseases through immunization of the susceptibles and restriction

of the infected. They profess to see a sharp distinction between curative and preventive medicine, between functions which may properly be operated by health departments and those which belong either to another department of government or are the exclusive reserve of private medical practice and medical philanthropy. Events tend constantly to disprove the accuracy of their vision. Experimental effort disproves the accuracy of their prophesies.

It has always been thus. Not one single advance in public health has failed to encounter opposition. The reporting of communicable diseases, from typhoid fever through tuberculosis, to syphilis and gonorrhea, was opposed by many doctors; the purification of public water supplies, by taxpayers and private water companies; the installation of sewers and sewage treatment works, by taxpayers and industries of the offending communities; milk control by milk producers and dealers, as well as a deluded minority of their customers; free laboratory service, by established private laboratories; school medical examinations, by school trustees, physicians, parents, and school superintendents; the establishment of well-baby, orthopedic, tuberculosis, venereal disease, and children's clinics, the employment of public health nurses, and the establishment of county health departments, by interested minorities of the medical profession. All have had to meet and overcome, not merely inertia, but active opposition.

Of course, always there has been support for these measures by progressive, socially minded doctors. Not many advances would have been possible without them. Often they have assumed *leadership* in the struggle. This is not a grudging admission. It is a declaration by one who has good cause to know what this kind of medical man has contributed to every advance. It is the intransigent conservative who usually obstructs. Always these opposition groups are abetted by a group of short-sighted taxpayers unwilling to spend an immediate dime to save an ultimate dollar.

We who are in public health do not believe we have been led to a consideration of the spread and the quality of medical care by any desire to increase our prestige, our influence, or importance. Consideration of this problem has been forced upon us by the evidences of neglect, of non-treatment, mistreatment and maltreatment, that have been thrust upon us in the course of our daily work. As medical men and women, as nurses, medical social workers, we see daily the results of poverty, ignorance, fear, pride, and what seem to be the shortcomings in our existing system, or lack of system, of medical care. We see the cases of tuberculosis that have reached an advanced stage before recognition or at least before receiving efficient care; cancers that have metastasized before receiving a competent medical examination.

We see the results of that pride which has prevented self-respecting individuals from asking for medical care which they cannot pay for, until dire necessity forces them to ask. We have seen cases of recognized tuberculosis refuse sanatorium treatment because their inherent dignity refused to submit to the dime searching investigation demanded by short sighted officials who wrongly think that the voting public demands this parsimony even in matters of life and death.

It is difficult to reconcile the opposition of so many physicians to free syphilis clinics with the spirit of the Hippocratic oath and the first section of the Code of Medical Ethics, which declares in essence that the care of the patient is the primary consideration; that the compensation of the physician

is subordinate. Why must an unfortunate's scanty resources be exhausted on a few inadequate weeks of private treatment, before he becomes eligible for a free clinic, if such exists; why is the treatment of so many patients terminated when their funds are gone, without even a suggestion that they go to a clinic.

Why does a profession, which presumably has made some study of human psychology, fail so largely to appreciate the real mental distress of most persons in admitting economic defeat, which is implied in asking for free medical care under our present system; and why, if it be recognized, is a profession which is essentially humanitarian, so inconsiderate? Why is there such insistence on the "fee-for-service" method of payment? A rational explanation of the opposition to free medical care by the government is in part due to the quality of the physicians and the services that have so often been rendered in the past under the "poor doctor" contract system. In greater part, however, it lies in the exploitation by both government and philanthropy of (1) the desire of the true physician to improve his knowledge by wider experience even at great self-sacrifice; (2) his ambition to achieve a justified prestige among, not only the public, but his fellows of the profession; (3) the profession's effort to adhere to a custom, consonant perhaps with the days when medicine was more largely pastoral, but which is utterly inconsistent with the scientific and technical advances of the past quarter century.

The "personal relationship" argument has been overplayed. The kindly physician "with a heart of gold" who "grannied" the children but practised the medicine of his student days, is no substitute for the doctor who uses the knowledge and instruments of modern science. I want no "pastoral" medicine in mine, until the scientific resources of diagnosis and treatment have been exhausted.

We public health people see many instances where the fee-for-service system of payment has interfered with the rendering of a complete health service. The interference is not merely the payment for the primary call, but the inhibition imposed on the physician against offering or suggesting services for other obvious needs of the individual or his family. Such an offer with a fee in sight, may be interpreted as seeking business; an offer without expectation of fee, as chiseling, cutting prices, and unfair competition. It is doubtful that any amount of public health education can overcome the economic and psychological barriers imposed by this "fee-for-service" system, and its alternative of "pauper" care. There must be something better.

For my own part I want to reiterate my resentment of the imputation, implied or explicit, that a salary stultifies, that a fee must be received or expected for every service rendered or it will be rendered grudgingly, inefficiently, or both; that men and women in public service are any less worthy in education, in capacity, in interest, in devotion to duty, than those who are in what we call "private life." I resent the imputation that no medical health officer ever worked overtime, exercised any independent judgment, or is anything more than a robot motivated by a monthly salary check.

In a recent address a prominent exponent of "organized" medicine asked the rhetorical questions whether we wanted England's, Hitler's, Stalin's, or New Zealand's medicine, or American medicine; whether we wanted socialized, state, or democratic medicine. Since the questions were obviously rhetorical, the expected answer was equally obvious that we wanted American, democratic medicine. Just what American, democratic medicine would be was not

explained. It may be well to raise that question. Possibly it might mean democratically administered state or socialized medicine, and it might include elements contained in or drawn from the systems of the various countries mentioned, or others.

In spite of the propagandist questions and implied answers of opponents of change typified above, we may well ask ourselves seriously what is American democratic medicine, and how may it or should it develop to be something truly American, truly democratic, and truly medicine in the best sense of the word. My answer is that it must be public health medicine, which means that it is preventive as well as curative medicine; that it is medicine delivered without distinction as to race, creed, occupation, or income; that it is for no less than three-thirds of the people.

It is typical of American government that it proceeds through legislation in response to a public demand. When mistakes are made in legislation they are rectified when they become apparent to a sufficient body of the voting public. This applies whether the error be inherent in the legislation or whether it fail to provide sufficient safeguards against administrative abuse or inadequate fiscal support. Important legislation involving large social or economic change is always accompanied by public hearings where expert testimony and the views of those interested in the probable effects of such legislation, whether they be thought good or bad, may be heard. If the subject be controversial there is further debate by the legislative body itself before a final vote is taken. All this is part of what we call "the democratic process."

Anything, therefore, which becomes law after being duly considered and enacted in this fashion by an American legislative body, provided it is constitutional and legal, *is* American and *is* democratic. "Name calling" cannot make it otherwise. It seems necessary to labor this point because so many seem to have such strange and erroneous impressions as to what is democratic and what is American. They do not think of, or do not know, of the many things in our government, our laws, jurisprudence, customs, and culture which derive from foreign sources. Until a generation ago the education of the American physician was hardly considered really complete until he had studied in Europe. The things we have brought from abroad we have adapted to our ways and we usually improved them. There is no reason why we should not in our own way, adapt, develop, and improve any form for the social reorganization of medicine that may be suggested by the results of the experience of other countries.

One thing we appear to need badly is American experience acquired through experiments, experiments that bring the health departments definitely into the picture. I doubt the health department need be concerned with experiments in medical indemnity insurance, since the common requirement that the first calls be made at the patient's own expense—*i.e.*, are not indemnifiable—tends to defeat the public health objective of prompt early diagnosis and care. It seems doubtful that such plans will ever reach the border-line income group on a *voluntary* basis, or will ever obtain popular confidence and support for a *compulsory* basis.

It seems entirely proper, however, for health departments to take a greater interest in the work of hospitals and groups giving medical care on a prepayment basis. Coöperation with the latter, should be predicated on the physicians employed being qualified for the services they are to render and ethical in the true and best sense of that term. I would say they should conform to the principles of ethics of the American Medical Association if

the fourth and fifth features, which make contract practice unethical, were more reasonably interpreted than they have been at times in the recent past. These are the features relating to reasonable competition in the community and "free choice of physician." That the patient's choice may not be a good choice has been abundantly demonstrated not only by the pecuniary success of blatant quacks, but by the experience of many communities paying for welfare cases on the fee-for-service basis. How could it possibly be otherwise when the patient has so little information on which to make a choice and receives so little help in making it.

"Reasonable" competition is a matter of opinion. It would seem that if this question is applied to the competition provided by a group of physicians organized under a prepayment plan, that decision should rest on the adequacy of compensation paid to the physicians in the group and of the facilities provided for their use. The quality of the service rendered would appear to be a proper basis for the group's competition with the profession as a whole, just as it is supposed to be between those in private practice.

There is greater need that state health departments interest themselves more keenly in the medical services rendered in connection with recognized fields of public health. The more extensive operation of government owned and operated tuberculosis hospitals under health departments would help bring all the forces of both groups into closer relationships and be mutually stimulating. The clinics for venereal diseases operated by local governments or with government aid have improved so materially in recent years that there is every encouragement for further expansion until the current needs are met competently and decently.

The improvement has been not only in the quality of treatment given but in better surroundings, more sessions and personnel, thereby permitting more time per patient. Both patients and doctors are better satisfied; there are fewer delinquencies; less effort is needed for the follow-up. Under the direction of the health department, generalized public health nurses are available for the necessary field services, are in closer touch with the clinic's problems, and come to a better appreciation of the venereal diseases as a public health problem. This is a development along the line of what I have termed public health medicine.

The services rendered in many health department clinics compare favorably with those operated by voluntary hospitals. As compared with general practitioner service, it is highly probable that better histories are taken, more sources of infection and contacts are examined and treated, more general physical examinations made, and better and more continuous treatment given.

Time will not permit of anything more than mention of how free public laboratory service has increased the use of laboratory aids to diagnosis; how well-baby and children's clinics have improved the examination of such children when brought to private practitioners; how prenatal clinics have increased the use of pelvimetry and taking of blood pressure; likewise, how orthopedic clinics have led to earlier recognition of and consultations for crippled children.

But in every advance that has been made in these services that lie outside the traditional field of environment and contagious disease, health departments have had to step with extreme care lest they violate or seem to violate or be charged with violating some assumed privilege or prerogative of the medical profession. While many conscientious physicians oppose the so-called "encroachments" of public health into clinical medicine, many of them are not

aware of the existing shortcomings of private practice in protecting the public interest, and some of them refuse to recognize the validity of any evidence that runs contrary to their opinions.

The present opposition of so-called "organized medicine," or of its spokesmen, to the expansion of public health service rests on grounds that are hardly tenable. These grounds of opposition are stated in a sort of *obiter dictum* purporting to explain the second principle of Chapter IV of the Code of Medical Ethics. This chapter relates to the Duties of the Physician to the Public, and the principle covers the subject of Public Health. I quote:

> The profession has resisted the efforts of some public health officials and employees to extend their work into the direct practice of medicine among individuals. Opposition to such practice is based on the already often repeated principle that medical relations are among the most personal and confidential of all human relations. They cannot be created in any satisfactory form between an official department or institution and an individual.[1]

These views rest fundamentally upon an inadequate concept of what the field of public health does and should comprise. The reasons given for opposing expansion are inadequate. The evidence obtained from experience demonstrates that satisfactory personal relationships have been maintained between physician and patient in many government medical services. The objections cited will not suffice to dam the current of public opinion which is becoming impatient with delay, and demands expansion to meet the obvious needs.

It is an American custom to leave matters to private initiative and performance until the public becomes convinced that a public agency can do it better or more adequately. Our fire departments evolved from the volunteer companies whose actions today evoke amusement. There are still volunteer fire companies, and fire insurance companies have developed their "protectives." The major functions of our police departments were formerly performed by private police or agencies selling their services to the private buyer. There still are private detective agencies.

Our vast system of public education has developed from the church, private and "pauper" schools established in Colonial days. In the second quarter of the last century—one hundred years ago—the struggle to secure free public education was second only to the question of slavery in the controversies of the northern states. Free public schools have won everywhere. But there are still private schools for those who wish to use them. The objective was not to abolish non-public schools, but to make certain that for every child there was an available school which he could attend without injury to his sensibilities. The arguments used in the controversy over the free school system are almost counterparts of those used today in the discussion of the expansion of government participation in medical care. It was argued that free public schools would halt improvement—ruin the existing private schools—and, above all, pauperize the people. Though some private schools went out of existence, many became part of the public school system. The system did not halt progress and it did not pauperize the people.

CONCLUSION

I fear that I have offered little in the way of constructive criticism, except possibly by way of implication and suggestion. If so, it is because I do not know all the answers. I have read, I have sought advice, I have searched my own experience. Some things seem clear, others hazy.

Although the *Minority Report* of the Committee on the Cost of Medical Care and the attitude of the official *Journal*

of the American Medical Association make it seem improbable, something might be gained by a conference which would review the findings of that committee, the national health survey, and the survey conducted under the American Medical Association and its subsidiaries. It is doubtful, however, in view of the incomplete and distorted information the *Journal* has published, and the reliance so many of the medical profession have placed on it as a source of information on both the technical and sociological aspects of medicine, that any important change of attitude can be expected from such a conference. Nevertheless, I offer the suggestion in the hope that there may be constructive guidance in an American, democratic spirit in the effort to legislate for a national health program. Persecution and prosecution will not answer our purpose.

Most of us medical men who practise the specialty of public health have been in private practice. We know the ways of practice as it is actually practised. We know its trials and difficulties. We recognize its accomplishments. We want no cheap medical care. We are for adequate compensation for qualified practitioners, not mere "soup-bone security" nor a mere "living" wage, but a compensation compatible with the education and culture required of a doctor, and bearing a direct relationship to the responsibilities that are involved in his daily work. We believe in compensation for doctors working in hospitals, clinics, and dispensaries, and for those giving free services in their offices and in patients' homes. We are for, not only high standards of medical education, but high standards of medical care and advancement of those standards in accordance with the discoveries of medical science. We are for a system of medical practice and a system of public health administration and public medical service that will achieve our hope and our goal of the best possible health for three-thirds of our people.

REFERENCE

1. *Economics and the Ethics of Medicine*, Bureau of Economics, A.M.A., 1937, p. 52.

Public Health Aspects of the Federal Food, Drug, and Cosmetic Act*

W. S. FRISBIE, F.A.P.H.A.

Chief, Division of State Coöperation, Food and Drug Administration, U. S. Department of Agriculture, Washington, D. C.

IF we were to adhere strictly to the title of this paper it might be concluded after a careful scrutiny of the Federal Food, Drug, and Cosmetic Act that its provision are few so far as public health—in terms of preventive medicine—is concerned. While the Act does not parallel that type of legislation common in state laws and in municipal ordinances which demands that market milk and cream shall be pasteurized and produced only by tested herds found to be free from disease, it does, however, embrace provisions which affect the public health and which are bound to afford our citizens an increased measure of protection. In a paper presented to this Association 12 years ago, the present speaker discussed the public health feature of the Act of 1906. Briefly, the conclusions, after 20 years' enforcement of that statute, were to the effect that essentially the only public health features were those which forbade the introduction of poisonous or toxic substances in foods in such amount as would render the food injurious to health, and the general provisions against the interstate shipment of food contaminated with filth, as well as food which was the product of a diseased animal. The drug sections of that Act related essentially to misbranding and were practically ineffective so far as public health protection is concerned. The Act of 1938 has made a definite step forward in the field of foods, drugs, and cosmetics which promises a definite measure of protection from the standpoint of public health.

Taking up first of all the food section of the Act (402(a)(1)), we find that a food is now adulterated if it bears or contains any poisonous or deleterious substance which may render it injurious to health. Under the Act of 1906, this was not true, for, to cite one instance, under that Act the interstate shipment of mussels, fatal to humans at certain times of the year, if not misbranded could not be prohibited. Our only action under that law was in the case of foods to which man had added a poisonous or deleterious ingredient. Furthermore, a section of the present Act reiterates this prohibition of naturally dangerous food, and in addition directs the establishment of a safety limit or tolerance in the case of foods which cannot be produced or manufactured without the addition of some toxic material. An example here, of course, is illustrated by those fruits and vegetables which, to insure a crop at all, must be sprayed with some material such as arsenate of lead. Perhaps a more striking feature

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with respect to protection is that section of the new law which authorizes the Secretary of Agriculture to establish a system of control by the issuance of permits. The condition under which this licensing system may be established is represented by a food establishment where there is the possibility of contamination with microörganisms and the safety of the food emanating from such establishment cannot be adequately determined by objective examination. In other words, if a food establishment is so conducted that there is the possibility of contamination of the product with microörganisms and the resultant product likely to cause sickness before examinations can be completed, then, and then only, is the Secretary of Agriculture authorized to forbid such shipment from such establishment until the issuance of an official permit. Less drastic perhaps is the clause which declares food to be adulterated if it is produced, manufactured, or handled in an establishment in a manner whereby it may become contaminated by filth. Still another new provision rules out containers for food which by their composition may contaminate the contents. The misbranding section which applies to food requires among other things that in the case of a food composed of two or more ingredients and for which no standard of identity has been established the label shall disclose the common or usual name of each ingredient, except a collective declaration for spice, flavoring, and color. This provision of the law rigidly enforced should afford a valuable guide to those unfortunate consumers who are allergic to specific items in the dietary.

Since nowadays the public is educated along scientific lines by feature articles in the press as well as by radio, the term "vitamin" has become a household word and claims for special diets are widely heralded—so much so that Congress has ruled that foods for special dietary purposes or those bearing vitamin claims shall be adequately labeled to inform the purchaser as to their value for the uses claimed, and the Secretary is authorized to prescribe regulations to this effect.

Incidentally, only harmless and certified coal-tar colors may be used, where their use is not otherwise illegal, in foods, and a system of certification for all such dyes has been established. Already lists of dyes suitable for use in foods as well as dyes suitable for drugs and cosmetics have been published. Artificial colors, artificial flavors, and permitted chemical preservatives are required to be so declared on the label.

When we come to the section of the Act which relates to drugs and therapeutic devices, we find here the one outstanding provision so far as public health and protection are concerned. I refer to Section 505, known as the New Drug Section. The Senate of the 75th Congress passed a resolution, No. 194, requesting information as to the cause of deaths attributed to the so-called Elixir of Sulfanilamide, and the report of the Secretary of Agriculture is incorporated in what is known as Senate Report No. 124. At the time this report was made, in November, 1937, 93 deaths traceable to the so-called Elixir of Sulfanilamide were reported by the Secretary of Agriculture, and, as history shows, this number was finally increased. Sulfanilamide itself had been acclaimed by members of the medical profession as a marvelous therapeutic agent in many severe manifestations of an infectious order. Much has been written of the therapy of this drug, as the pages of the *Journal of the American Medical Association* attest, coupled, however, with the editorial comment that caution should be exercised in its administration and that such administration should take place

only through competent physicians.

A firm of manufacturing chemists, having a request for this relatively insoluble drug in a liquid form discovered through their chemist that diethylene glycol was a solvent. The firm thereupon manufactured quantities of this so-called Elixir, really a solution, in diethylene glycol, of sulfanilamide, and put it on the market largely through physicians, although drug stores supplied consumers by over-the-counter sales with it. Early in October, 1937, the Food and Drug Administration received reports of deaths attributed to the administration of this drug in liquid form. Immediately investigators were dispatched to the scene of death, as well as direct to the manufacturing firm, and our inspectors found that this firm had actually put this drug on the market without experiments to determine its safety, in spite of the fact that prior to that time medical literature had emphasized the possibility of toxic symptoms of this glycol. The firm simply tested the product for flavor! While there were some sales of this drug over the counter to purchasers, most of them were through physicians direct, or on prescriptions.

Obviously, this statement should not be interpreted in any sense as a criticism of the medical profession on the ground of carelessness, since the practising physician, with the multitude of drugs which are placed on the market at his disposal, is wholly incapable of determining for himself the safety of products put out by firms which enjoy a reputation for dependability. Rather is the criticism to be placed upon failure of the public to protect itself through adequate legislation. Fortunately, this defect has been remedied, so far as is practicable, for when the Federal Food, Drug, and Cosmetic Act was passed in June, 1938, it not only contained a specific section relating to new drugs but designated this as emergency legislation, effective at the time the signature was placed on the bill; this date was June 25, 1938.

To show how Congress has safeguarded the manufacture and shipment of new drugs, the law requires that in the case of a new drug, first an application must be filed with the Secretary of Agriculture, and it must contain full reports of all of the investigations which have been conducted to show the safety of such drug, there must be included a list of all of the components, the actual composition of the drug and the control exercised in the manufacturing, processing, and packing, and in addition samples of the drug and the complete labeling must be submitted. After sixty days an application is effective unless notice to the contrary issues. If the information is deemed insufficient and tests inadequate, the Secretary shall refuse the permit, or he may even revoke it after the permit becomes effective if subsequent tests show that the original tests were inadequate, or if the application contained false statements.

New drugs used solely for investigational purposes by experts who by training and experience are so qualified are exempted. By regulation, a drug is deemed to be new if any element of its composition is new, whether menstruum, excipient, carrier, coating, or other component, or a combination of two or more substances none of which is a new drug, or variation in the proportion of a substance even though that substance is not a new drug. Where the use of a drug, not in itself a new drug, for treating other symptoms than those for which the drug has been used is deemed a new drug, also a drug is "new" if the dosage, or method or duration of administration or application or other condition of use suggested in the labeling is changed, even though such drug is otherwise not a new drug. To show the significance of this sec-

tion, the Food and Drug Administration has to date on file more than 1,700 applications for new drugs.

Another important section of this new law is the one which relates to dangerous drugs, and which declares that a drug is deemed misbranded if it is dangerous to health when used in the dosage, or with the frequency or duration prescribed, recommended, or suggested, in the labeling. While the Act does not specify drugs which are dangerous, under this section the Food and Drug Administration, after the passage of the Act of 1938, issued specific notices to the effect that the department would regard cinchophen, neocinchophen, aminopyrine, sulfanilamide, and related substances, as coming within the ban of this section. These drugs have been designated as dangerous within the meaning of the Act because of the reports in the medical literature as to the untoward effect of their administration. There are others for which no similar notice has been or will issue. The responsibility in each case must rest upon the manufacturer.

Aminopyrine, as the medical profession knows, is capable of producing fatal agranulocytosis and this has been known for a number of years. Cinchophen and its derivative, neocinchophen, are definitely associated with acute atrophy of the liver. Sulfanilamide, with its known possible damaging effect on the blood cells, is definitely placed in the dangerous class. In fact, the Council on Pharmacy and Chemistry of the American Medical Association has warned against the indiscriminate use of this drug.

Another drug, which was the subject of publicity under the Act of 1906, is dinitrophenol, the reducing agent so often attended with tragic results. We have available reports of practically 100 cataracts as a result of the use of this drug. This also appears responsible for cases of agranulocytosis. As long ago as 1933, the Council on Pharmacy and Chemistry, in the *Journal of the American Medical Association*, July 15, 1933, said "There are limitations to and possible dangers from the use of the drug clinically. It should be used only under strictly controlled conditions." In the same issue of that *Journal* is the following editorial comment: "Certainly for the present, at least, such investigations should be largely limited to controlled studies in hospitals by physicians competent in evaluating the effects of the drug, and with laboratory facilities capable of accurately determining blood, body tissue and other changes." It is worthy to note that at least one state has declared the sale of dinitrophenol as a drug under any condition to constitute a felony.

We may also take note that now the narcotic or hypnotic drugs which may be habit-forming are required not only to be named on the label but the text of the Act itself requires the notice "Warning—May be habit forming." Furthermore, products composed of two or more ingredients are required to show the name of each active ingredient, here again making it possible for those who elect self-medication to avoid those drugs to which there is a known idiosyncrasy. Last but not least the old joker with respect to therapeutic claims has been eliminated; no longer does the government have to show, frequently by expensive and time-consuming testimony, that the label of a worthless preparation is both false and fraudulent.

The cosmetic section is a new departure and the one significant clause in this part of the law is that which relates to dangerous cosmetics. Through the inevitable publicity which attended the passage of the new Act, the public became well acquainted with the tragedies laid at the door of paraphenylenediamine eyelash and eyebrow dyes. No longer may a cosmetic move

in interstate commerce which contains any ingredient which is dangerous when used according to the directions on the label, or when used in the customary or usual manner. Seizures were immediately effected of such dangerous cosmetics a few days after this section of the Act became effective in June, 1938. Some of the preparations which were indicted as causing tragedies are no longer obtainable. It is interesting in this connection to call attention to the fact that in the program for certification of coal-tar dyes, no coal-tar dye will be certified for use in the orbital area, or if a dye has been certified and is contained in a cosmetic, for example, recommended for use in the orbital area it will by regulation be deemed to be an uncertified dye and its use prohibited.

In conclusion, it should be stated that this paper covers by no means all of the provisions which may have a bearing, perhaps indirectly, on public health and welfare, but merely recites the outstanding features from the public health standpoint of this Act of 1938. It is perhaps unfortunate that, with all the deaths and other tragedies attributed to drugs and to cosmetics, it took Congress 5 years to pass this Act, but fortunately it is passed, and even in its imperfect condition represents a substantial measure of protection to health for which the consumer of foods and the user of drugs and cosmetics should be devoutly thankful.

Aspects of Governmental Policy on Stream Pollution Abatement*

HERMAN G. BAITY, Sc.D., F.A.P.H.A.

Professor of Sanitary Engineering, Division of Public Health, University of North Carolina, Chapel Hill, N. C.

ALL persons and agencies interested in the stream conservation problem are mutually agreed that there exists in this country a pollution situation that is most undesirable and uneconomic; that such conditions are so widespread as to constitute a major national concern; and that such remedial and preventive measures should be taken as to protect the public health, preserve public decency, conserve the wild life resources, and promote the use of natural waters for wholesome recreational purposes. It is ironical and unfortuate that some of these agencies, whose interests and objectives are common, should differ so widely and fight so bitterly over ways and means of accomplishing desirable ends. The greatest contribution that can be made to the cause would be the encouragement of a dispassionate consideration of the opposing points of view and a reconciliation of differences. During the recent session of Congress there have been evidences that feelings are running so high as to develop bitter prejudices, cause misrepresentations of facts, and encourage the widespread release of misleading propaganda. The proper legislative solution of this vexing problem, which requires the ultimate in vision and perspective, should take place in an atmosphere that is clear and calm.

Before considering the opposing points of view or attempting to weigh existing differences, it would be well, perhaps, to reflect briefly upon the fundamental uses of streams and the general nature of the pollution problem.

THE NECESSARY USES OF STREAMS

The uses to which streams and other natural bodies of water are put are many and various, serving in as many ways the needs of our individual and national life. Due to geographical and topographical conditions, the river basin becomes a kind of closed community so far as water uses are concerned. The stream becomes the source for domestic and industrial water supply, irrigation and hydroelectric power developments; it serves the needs of recreational facilities; it provides the habitat for fish, shellfish, and water fowl; it furnishes the medium for water transportation; and provides the vehicle for the carrying away and ultimate disposal of the liquid wastes originating from our community life and industrial processes.

The use of a natural water course for the reception and disposal of liquid wastes is as necessary and legitimate as its use for any other purpose, subject to definite limitations. If such use renders the river unfit as the source of present or potential public water supplies,

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offends the senses, endangers health, inhibits the growth of wild life, prevents its use for recreation, or obstructs navigation, the development of the drainage area will, as a result, be hindered or even stopped, and all people and properties within the area will suffer. But in emphasizing this danger one must not overlook the possible economic consequences which would result if overzealous demands for a pristine degree of stream cleanliness required a degree of sewage and waste treatment that would be prohibitory to municipal and private enterprise.

The proper balance of stream uses is different for every stream, and for each, depending upon conditions, there is one combination which is most logical and economical. Such a policy does not mean that our water courses need become or remain open sewers. In every case public decency and economy demand a degree of cleanliness sufficient to avoid nuisance conditions, provide recreational facilities, support useful aquatic life, protect the public health, and preserve the natural beauties of water. The solution of the problem lies in true conservation, which implies the maximum possible judicious uses of the many properties of streams, such uses to be evaluated from a consideration of the broad demands of the public welfare. It does not lie in any simple statutory device which attempts to regulate water quality upon the basis of a single water use.

POLLUTION ABATEMENT A PECULIAR PROBLEM

A complicating factor in dealing with stream pollution is the fact that the municipal or private agency making an outlay of money for pollution abatement is not the one which benefits directly from the expenditure. It is the down-stream riparian owners and users of water who suffer from the pollution, or who reap the benefits of its abatement. In an age of exploitation of natural resources this peculiar fact has, quite understandably, caused both public and private polluters of water to dump their wastes in the easiest and least expensive manner, leaving the unpleasant consequences to the users of water on the streams below. In the past they have too often ignored the public interest and the welfare of succeeding generations and have shunned the responsibility of providing pollution relief.

But the days of pioneer exploitation and the advancing frontier are gone. The growth of densely populated and highly industrialized areas has tremendously increased liquid pollution, while the rainfall has remained practically constant, and normal stream flow has actually diminished under the influences of modern land use. The resulting condition is not limited in its effects to esthetics, recreation, or public health; the economic consequences are being felt. Many industries requiring water of high quality for modern processes of manufacture are already suffering great losses by reason of its defilement by their own wastes, or those of sister industries.

It is high time that serious cognizance be taken of the condition and value of the nations streams, and plans laid for the sanitary redemption of some, and for the continued protection of others—plans not only for the present, but for the decades and centuries which are ahead.

EXTENT OF THE POLLUTION PROBLEM

The Third Report of the Special Advisory Committee on Water Pollution of the National Resources Committee, presented to Congress by President Roosevelt on February 15, 1939, contains the most accurate available data regarding the present status of the pollution problem. It estimates that 73,174,000 people of the United States

were served by public sewerage systems as of August, 1938, which represents 56 per cent of the 129,818,000 estimated population of the country at that time. This sewered population discharges daily approximtaely 5¾ billion gallons of liquid wastes, practically all of which finds its way, treated or untreated, into streams, lakes, and tidal estuaries. This enormous flow represents, however, less than ½ per cent of the average daily flow of the streams of the country. The sewage from about 19,000,000 persons is subjected to primary treatment of sedimentation, while an additional 20,700,000 persons are tributary to secondary treatment plants. This total population of 39,700,000 served by some type of treatment works represents about 54 per cent of the sewered population, or approximately 31 per cent of the country's total population. In terms of volume, roughly 2½ billion gallons of sewage are discharged daily in an untreated condition into water courses, while about 3¼ billion gallons per day receive treatment prior to discharge. However, it should be borne in mind that these statistics do not paint a true picture of the sewage pollution problem. The Special Advisory Committee is careful to point out that it is not essential that all sewage receive complete treatment and that, under certain conditions, no treatment may be necessary or desirable.

In the field of mining wastes, the committee estimates that annually about 2,700,000 tons of sulphuric acid entered streams as drainage from bituminous coal mines prior to the recent widespread campaign of sealing abandoned workings. From anthracite mining large quantities of culm and acid drainage also find their way into the water courses of this district. The oil fields are estimated to produce daily about 10 million barrels of brine, a considerable part of which drains into streams. In some sections of the country hydraulic mining operations continue to contribute materially to the silting of stream channels.

A great variety and volume of liquid wastes are discharged from industrial plants into the streams of the country. No reliable estimates are available as to their amounts, or their specific characteristics and effects, but the committee rated them in descending order of importance as follows: food products, paper and pulp, textiles, petroleum products, and metallurgical products. These wastes are harmful to the receiving streams in a number of ways. They may contain substances causing disease, they may impart obnoxious tastes, odors, and colors, which are revulsive to the senses, render the water unsuitable for industrial purposes, corrode structures, prevent recreational use of the stream, and inhibit the development of fish and other forms of wild life.

COST OF POLLUTION ABATEMENT

The Special Committee estimates that the further cost of treatment works to bring about a reasonable abatement of water pollution would involve an expenditure of approximately $1,000,000,000 for municipal sewage treatment, about $52,000,000 for the control of coal mine drainage, not less than $100,000,000 for the treatment of oil field brine, and approximately $900,000,000 for the treatment of industrial wastes for which practicable processes have been developed. The annual operating and maintenance costs for the new sewage treament plants would amount to at least $15,000,000, while the fixed and operating charges for the treatment of mining, oil field, and industrial wastes would probably exceed $225,000,000 per year. These estimates of the committee for installation and operation assume that optimum use would be made of the natural purification capacities of streams and that, in many situations, much waste would be discharged untreated or

with only minor treatment. The complete treatment of all wastes is estimated to cost several times more than the programs outlined above. Such a degree of treatment is considered unattainable and, even though it were possible, a program of this extent is not considered necessary.

FEDERAL LEGISLATION

During the past 5 years various bills dealing with the problem of stream pollution have been introduced into Congress. These bills fall generally into two types, representing two opposing schools of thought with respect to regulation, and may be briefly summarized as follows:

The first measure dealing with pollution control was introduced into the 74th Congress by Senator Augustine Lonergan of Connecticut. Largely supported by the wild life conservation group, the Lonergan Bill provided for a central federal regulatory agency to exercise pollution control through injunction procedures in the United States courts.

At about the same time other bills were introduced into the Senate and the House providing for federal participation, through an existing agency, in a program of educational, research, and coördinating activities, but with regulatory control left to the states. These bills embodied the principles considered desirable by the health officials of the country, and were represented in the later Barkley-Vinson measures introduced in the Senate by Senator Barkley and in the House by Representative Vinson.

Neither the Lonergan nor the Barkley-Vinson type of bill received final action during the 74th Session, and both types reappeared during the 75th Session. Late in this session the Vinson Bill was passed by both houses after the elimination of the drastic regulatory provisions attached to it by amendment in the Senate, and the U. S. Public Health Service was designated as the agency to represent the United States Government in the program. Quite surprisingly, the bill was given a pocket veto by the President on the basis of a technicality, although he voiced hearty approval of its basic objectives and principles.

The 76th Congress saw the early introduction in the House of bills similar to the Vinson Bill: HR 295 (Parsons), HR 922 (Spence), and HR 2890 (Bland). One similar to the Lonergan type, HR 4170, was introduced by Representative Mundt. Later in February, Representative Mansfield, Chairman of the Committee on Rivers and Harbors, introduced HR 4314, the bill suggested by the Advisory Committee on Water Pollution of the National Resources Committee as incorporating the best opinion of federal planning, budgetary, health, and conservation agencies, containing all the basic principles included in the original Vinson Bill, and meeting the technical objections upon which the Presidential veto had been based.

Meantime, Senator Barkley had submitted S-685, the same bill as the Vinson measure of the last session with some minor revisions to remedy partially the criticisms of the President, and Senator Clark had introduced S-1691, another measure similar to the Lonergan bill. The Barkley measure passed the Senate with minor amendments and went to the House, where it was reported favorably after being amended to conform to federal budgetary procedure. This bill was given clearance in preference to HR 6723, a revised bill later introduced by Mr. Mundt, but the adjournment of Congress left it in the category of unfinished business. It will doubtless come before the House for action at the next regular session.

CONFLICTING POINTS OF VIEW

In general, the organized wild-life conservation groups appear to believe

that the only effective machinery for pollution control is a central federal agency vested with broad and arbitrary powers to enforce abatement orders by mandamus procedures in the federal courts. They select the U. S. War Department as best qualified to administer the program. They profess a lack of confidence in the ability of state and local governments to enact adequate and uniform laws for the abatement of pollution or to enforce such laws even though they were on the statute books. Furthermore, they charge federal and state public health agencies with an unsympathetic attitude toward pollution abatement, disparage the achievements of these organizations in preventing and relieving pollution, discount the value and applicability of their research developments, and actually accuse these public agencies of bad faith in dealing collusively with offending industry.

On the other hand, all of the public health agencies of the country, all federal bureaus and departments concerned with water quality and use, such planning agencies as the National Resources Planning Board, and the President of the United States, apparently favor a type of legislation which gives to the U. S. Public Health Service certain functions and responsibilities pertaining to research, education, stimulation, and coördination, but leaves to the states, or authorized interstate agencies, the powers of regulation and control.

Those who have had most experience with problems of this nature subscribe to this latter policy as being most logical, reasonable, and, in the long run, most productive of satisfying results. Although the advocates of rigid federal regulation may not be entirely without justification for their impatience with existing conditions and their cynicism with respect to the future effectiveness of state control, it is believed they may be laboring under certain illusions in their active legislative campaign.

Admitting the possibility that any commentator on so controversial a subject may have predilections that sway him from a course of strict neutrality, the writer ventures to examine a few of the points at issue between the two schools of thought:

Federal vs. State Powers—The power delegated to Congress by the commerce clause of the Constitution is limited to commerce between the several states. Under this authority the federal government now exercises control over the discharge of refuse matters, other than liquid wastes, into navigable waters, and the Oil Pollution Act of 1924 rests upon this clause for its constitutionality. The same justification might apply to pollution of navigable streams by domestic or industrial wastes where such discharge constituted actual and appreciable hindrances to navigation, such, for example, as sludge banks in ship channels. However, isolated cases of this kind would not appear to authorize the taking over of the entire field of pollution control by a federal agency. Since international treaties become the supreme law of the land, without question of constitutionality, the Congress has power to control pollution in so far as necessary to fulfil treaty obligations relating to boundary waters, regardless of whether such streams are navigable or intrastate in character. The federal government has the power to regulate pollution on the public domain and exercises some indirect control over water quality through the "beneficial public uses" clause of the Federal Power Act. Its domestic quarantine powers give it authority to approve the safety of water used for drinking and culinary purposes on interstate carriers, and, under voluntary agreements with the various states, it enforces regulations regarding the certification of interstate shipments of shellfish. Aside from these limited powers, in the opinion of leading authorities, there appears to be no con-

stitutional authority for federal water pollution control.

The authority of the states over such intrastate matters as stream pollution is well established, and cannot be taken away. State legislatures, by exercise of the police power, may enact statutes relating to pollution control or may delegate to agencies of the state the authority to formulate and enforce regulations pertaining thereto. However, the federal government does have the authority to conduct scientific and technical investigations relating to water pollution, to coöperate with the states in an advisory capacity, and to render financial assistance to state and local authorities for investigative and construction purposes. There is strong opinion that, regardless of legal powers, this indirect type of participation by federal agencies would result in a more effective and orderly program of pollution abatement than could possibly be achieved by federal domination.

Efficacy of Centralized Control—It is only natural that those observing the sad plight of prostituted streams should infer that the trouble lies in the inefficacy of control machinery under our system of federal and state division of responsibility. There comes the urge to scrap the machinery and build on a different design. It appears doubtful that our state-federal form of government is responsible in any large measure for the present situation. The pollution problem is old and world-wide, and for almost a century the countries of Europe have been wrestling with the legislative and administrative phases of pollution abatement. No nation has yet developed a workable plan for reconciling satisfactorily the various conflicting interests in natural waters to provide maximum judicious use for the greatest public benefit. It appears that the record in small highly federalized countries is no better than in those where the legislative and enforcement responsibilities are dispersed.

The explanation of the condition lies not so much in the deficiency or obsolescence of control machinery as in the extreme complexity of the problem, the multiplicity and conflict of interests, and the fact that pollution is only one phase of the larger problems of the conservation and maximum advantageous use of our water resources in general. A change in this condition will not result spontaneously from any device of centralizing power and responsibility. It may be expected to come gradually from the extension of powers on all levels of government, by fitting pollution control into its proper place in the broader control program of planned conservation and use of all water resources, by constant educational and promotional work of all interstate agencies, by relentless attacks along the whole front of the water problem by local governments under the guidance, stimulation, and participation of federal groups, by the promulgation of interstate compacts and agreements, and by financial assistance from the federal government to public and private polluters requiring such aid.

Enforcement by Mandate—To the provoked and impatient the correction of public evils by mandate has the appeal of being quick and effective. Regulation appears on the surface to be a simple device for curing all ills. Critics proclaim: "There ought to be a law." Perhaps it would be well to remember other times in our national life when similar evils have been observed, and when the laws designed to provide the perfect panacea proved to be unenforceable and disappointing. Moreover, those who have had occasion to invoke the police power of government in dealing with the public have long ago learned that the mailed fist is less productive than the velvet glove. Public psychology reacts adversely to arbitrary force. Persuasion, education,

and coöperation are more effective instruments than the "big stick," and the power of law should be held in reserve for exercise only when milder measures fail. The Lonergan, Clark, and Mundt types of legislation provide for actions in equity to be brought in the federal courts and instruct United States attorneys to institute such actions when requested to do so by the Secretary of War or any one of the district boards. These bills appear to remove all existing authority of the states over sewage and waste treatment plants and place their operation directly under the supervision of the Chief of Engineers, except for those waters ruled not to be navigable.

Although these bills carry provisions for coöperation with state agencies, for advisory services of other federal agencies, for the collection and dissemination of information, and for federal financial assistance, it is feared by many that the emphasis upon drastic control by court action would result in inadequate investigations of actual stream requirements and of the economy and applicability of treatment processes. Precipitate action without complete information would result not only in mental anguish but in the gross waste of public and private funds. Enforcement of the provisions of these measures with respect to new or additional pollution would tend to hinder industrial development and municipal growth, and might preclude the extension of sewers to presently unsewered and insanitary communities. In any case, such measures would be concerned with pollution alone and would neglect consideration of the many other related and inseparable problems of water conservation and use.

Pollution Primarily a Health Problem—There can be no doubt that among the many objectionable and hazardous effects of water pollution the interests of the public health are paramount. Even the most ardent angler must recognize that, in the general economy of a stream system, the uses of water for such vital needs of life and health as public water supply and the ultimate disposal of domestic wastes are of supreme significance. And when the health interests in a stream are adequately safeguarded there is usually the consequence that the quality standards of water for other uses are automatically met. It is therefore only reasonable and proper that the administrative responsibility for pollution control should be vested in federal, state, and local health agencies.

In their criticism of the Barkley-Mansfield type of bill, sponsors of the Mundt legislation disparage the splendid research accomplishments of the U. S. Public Health Service in this field and charge health agencies in general with indifference, inefficiency, and bad faith in dealing with water pollution. The charge has been made repeatedly that health organizations are in league with industrial polluters in conducting "study clubs" for the indefinite and wilful delay of corrective measures. All who are acquainted with the records of the U. S. Public Health Service and state health departments will recognize such statements as false and libelous. There is probably no organization in the world that has excelled the record of the U. S. Public Health Service in the development of fundamental knowledge in the realm of stream pollution, water and sewage treatment during its 26 years of intensive and basic research on these subjects. The critics appear to be so unacquainted with the technical bases of pollution abatement as to fail even to recognize that the scientific problems are difficult, complex, and slow of solution. They remind the writer of an impatient textile executive who said that he could take a good chemist and solve all the waste treatment problems in his industry in 30 minutes.

Army Engineers or Public Health

Service—Sponsors of the Mundt and Clark Bills insist that federal control be vested in the War Department in the interest of rigid enforcement, and cite many other reasons why the Army engineers should be placed in charge of the program. Without disparagement of the splendid record of the Corps of Engineers in their field of responsibility, it can be stated that not one of these reasons is valid. It is notable that there is missing from this list of reasons the primary one which should govern the selection of any federal agency to perform a particular task, namely, the availability of personnel having the viewpoint, training, experience, background, and technical equipment to handle the problem. These resources for pollution control have been built up by the U. S. Public Health Service over a period of more than 25 years, during which time, with meager appropriations, they have assembled a highly qualified organization and established an enviable record of useful accomplishment. This work has been quiet, largely intangible, and removed from public view — a reason, perhaps, why the tangible and costly construction projects of the Corps of Engineers should give some people the idea that this agency is vastly superior in its ability to get things done.

As a matter of fact, in all stream investigations in which the Corps of Engineers and the U. S. Public Health Service have participated jointly, the Corps has requested the Health Service to handle all phases of the work pertaining to pollution, stream quality, and abatement recommendations. It is presumed that this has been done because they feel that the Health Service is much better equipped to do the job. In any type of program the Army engineers would continue to handle matters relating to hydrology, maps, channel structures, channel configurations, etc., but it is certain that they would be the last to claim their superior qualifications to deal with the complex problems of pollution. It is apparent that the real reason for the opposition to the U. S. Public Health Service is the fact that this agency does not subscribe to the extreme views of a few groups interested in only one phase of the problem. Through more than 50 years' fruitful participation with states in regulatory measures for the improvement of the public health and welfare, the U. S. Public Health Service has gained the full faith and confidence of the people of the nation. It is logical and expedient that it should represent the federal interests in any pollution abatement program.

Progress in Pollution Abatement—Advocates of the plan of rigid federalized control-by-injunction maintain that the streams of the country are in such appalling condition as to constitute a threat to civilization, and are becoming progressively worse, as a result of the inherent impotency of any state system of regulation and the utter indifference and ineffectiveness of local enforcement agencies. In this connection it is enlightening to look at the record.

According to the report of the Special Committee on Water Pollution, more progress has been made in municipal pollution abatement during the past 6 years than in the preceding quarter of a century. Since 1932 the population tributary to treatment plants has increased from 21,500,000 to 39,760,000, a change from 35 to 54 per cent of the sewered population of the country, or an increase from 17 to 31 per cent of the nation's total population. Within this period, and in the face of a rapidly increasing population and tremendous extension of sewer service, the sewered population not served by sewage treatment plants has been reduced from 40,500,000 to 33,414,000. This has been accomplished at a cost approaching one billion dollars.

In the State of Ohio, for example,

during the 12 year period, 1928 to 1939 inclusive, 160 municipalities have constructed sewage treatment improvements costing about $40,000,000 (exclusive of costs for collecting sewers, interceptors, etc.,) serving 3,223,000 people, or nearly 50 per cent of the state's population. In the State of New York, between 1933 and 1939, 102 municipal sewage treatment works have been built at a cost of more than $38,000,000, and serving 2,854,000 persons. Together with the 161 plants installed in the preceding 30 years, these works now treat the sewage of 263 cities and towns, representing a population of 5,400,000 people, or 78 per cent of the entire sewered population of the state. New York City's 10 year program for cleaning up the pollution of that area at a total cost of about $150,000,000 is proceeding on schedule, and several large plants have been placed in operation. The great abatement program of Chicago is essentially finished, and those of other large centers of population and industry are proceeding apace. Proportionate progress is being made in other regions of the country.

While an important impetus to this recent progress may be attributed to the availability of federal grants-in-aid, most of the credit should probably go to the behind-scenes educational and promotional activities of public health agencies which have been relentlessly carried on. And another important reason for progress lies in the realization by municipalities and industries of their moral and legal responsibilities in pollution abatement. While the progress made in the treatment of industrial wastes has not been so outstanding as that in the municipal field, many new plants have been constructed, and the general indifference of industry is noted to be rapidly disappearing.

The Federal-State Pattern of Cooperation—During a period of about 50 years, there has been developed a plan of action and coöperation between federal and state authorities on all matters pertaining to the public health that has effected a closely-linked relationship and results of most satisfying and significant values. In essence the plan involves the provision by the U. S. Public Health Service of (a) research services to develop scientific facts and procedures, (b) safe and uniform standards, (c) guidance in methods and procedures, by expert technical assistance, and (d) financial assistance; while the responsibility for legislation and administration of the programs is left with state health agencies. Notable among the achievements in the sanitary field of this working arrangement have been: the improvement of drinking water quality, with consequent decrease of the intestinal diseases, through the application of the Treasury Standard; the successful attack on the malaria menace of the South through the use of scientific facts, methods and procedures developed by the Public Health Service; the unprecedented advance in safe milk production through the adoption of the U. S. P. H. S. Standard Milk Ordinance; and the protection against infected shellfish by the application of standards pertaining to sources, production, and marketing. In all of these activities, and many others, the U. S. Public Health Service has developed the scientific facts and shown the way; the states have accepted guidance and executed programs with enthusiasm and efficiency. There is every reason to believe that this plan is the best one that can be conceived for dealing with the problem of stream pollution abatement.

CONCLUSIONS

The foregoing discussion indicates the author's belief in the following principles relating to the administration of a national program of pollution abatement:

1. That a stream must be recognized as supplying various important needs within the drainage basin, and that all these uses must be considered and balanced.

2. That one of the natural and inescapable uses of streams is for the reception and ultimate disposal of liquid wastes produced on their watersheds, after such treatment as may be required.

3. That the self-purification capacities of streams must be utilized to a greater or less degree in all cases, alone or as an adjunct to treatment processes, and that complete treatment of all wastes is neither economically possible nor scientifically necessary.

4. That control of pollution by the injunction process, administered by a federal agency, is of doubtful constitutionality, contrary to the principles of democratic government, wasteful of money and ineffective in its prospect of satisfying results.

5. That regulation of pollution is a proper function of state government, and that a federal agency should operate in an investigative, stimulative, and coördinating capacity, with financial aid furnished for administrative and construction purposes.

6. That the vexatious problems of pollution in interstate waters can best be solved by an extension of the system of interstate compacts and agreements.

7. That the most important factors in pollution abatement are those related to public health, and that health agencies should have the responsibility of administering the program.

8. That the U. S. Public Health Service is best qualified to represent the interests of the federal government, and that the pollution abatement program should be conducted in coöperation with state health agencies along the lines of the "Federal-State Pattern" which has been found so effective in other similar undertakings.

9. That with a national campaign conducted under such a plan, and with reasonable availability of federal funds for loans and grants-in-aid, the future progress in pollution abatement should be comparable with that of the past 6 years. At this rate, within a period of 5 to 10 years the more objectionable conditions of sewage and industrial waste pollution should be corrected.

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I. STATUS OF WATER POLLUTION IN UNITED STATES, 1938

1. *Municipal Sewage:*

Total Population of United States	129,818,000
Urban Population (Incorporated Places in Excess of 2,500)	73,200,000
Served by Public Sewers	73,174,000
Per cent of Total Population Served by Sewers	56
Population Tributary to Primary Sewage Treatment Plants	19,000,000
Population Tributary to Secondary Sewage Treatment Plants	20,700,000
Total Population Served by Sewage Treatment Works	39,700,000
Per cent Sewered Population Served by Treatment Works	54
Per cent Total Population Served by Treatment Works	31
Daily Discharge of Untreated Sewage, gallons	2,500,000,000
Daily Discharge of Treated Sewage, gallons	3,250,000,000

(NOTE: These statistics cannot give accurate representation of pollution problem. It is not essential that all sewage receive complete treatment and, under certain conditions, no treatment may be required. The reasonable self-purification capacities of streams should be utilized.)

2. *Mining and Industrial Wastes:*

Acid Mine Drainage from Bituminous Coal Fields, tons H_2SO_4/year	2,700,000
Culm and Acid Drainage from Anthracite Coal Fields	Unknown Amount
Brine from Oil Fields, barrels per day	10,000,000
Debris and Silt from Hydraulic Mining Operations	Unknown Amount
Industrial Waste from Manufacturing Processes	Unknown Amount

(NOTE: Waste-producing industries account for about 75 per cent of manufacturing activity of U. S., with an annual value of production of 18 billion dollars and with an employment of about 3 million persons.)

II. ESTIMATED COST OF POLLUTION ABATEMENT

1. *Municipal Sewage:*

Cost of Additional Sewage Treatment Plans	$1,141,000,000
Annual Operating Costs of Additional Treatment Plants	15,000,000

(NOTE: These estimates based upon degree of treatment considered necessary and reasonable. If complete treatment were applied, additional capital cost would be about $7,000,000,000 and annual operating cost about $30,000,000.)

2. *Mining and Industrial Wastes:*

Cost of Acid Control at Abandoned Bituminous Coal Mines	$ 12,000,000
Cost of Corrective Treatment at Anthracite Coal Mines	40,000,000
Cost of Treatment Plants for Oil Field Brines	100,000,000
Cost of Industrial Waste Treatment Works	900,000,000
Total Capital Costs	$1,052,000,000
Annual Costs of Mining and Industrial Waste Treatment	225,000,000

(NOTE: These estimates do not contemplate complete treatment of all wastes, but assume optimum use of natural purification capacities of streams.)

3. *Recapitulation:*

Capital Cost of Necessary Treatment Works	$2,193,000,000
Annual Operating and Maintenance Costs	240,000,000

III. PROGRESS IN POLLUTION ABATEMENT IN UNITED STATES

			Population Tributary to Treatment Works	
Year	*Sewered Population*	*Tributary to Treatment Works*	*Per cent of Sewered Pop.*	*Per cent Total Pop.*
1904	28,000,000	1,100,000	3	1.2 (approx.)
1910	34,700,000	3,900,000	11	4
1932	62,000,000	21,500,000	35	17
1938	73,174,000	39,700,000	54	31

Some Essentials in Training for Public Health*

ALAN GREGG, M.D.

Director for the Medical Sciences, Rockefeller Foundation, New York, N. Y.

THE task of arranging and effecting adequate training for public health officers is a duty for which we are likely to be held answerable by a mystified and impatient public for some years to come. Until every state is able to provide from its native sons and daughters its future health officers and personnel, to train them, and to give adequate employment to most if not all so trained, we may confidently expect much more than local interest in the performance of our schools or courses of training for public health work.

Outsiders interested in the performance of a school are not likely, however, to take a sentimental or overly sympathetic attitude toward the discrepancies between results sought and results obtained. State governments seeking competent health officers are not well impressed by excuses. Forceful needs do not adjust their demands to the limitations imposed upon a school of public health by insufficient personnel, inadequate income, personal jealousies, or lack of administrative foresight. Outsiders looking for competent health officers are impatient of those deformities and inadequacies in a school which we may explain as "due to historical development." To put it in other words, any course or school for the training of public health officers is certain to live during the next 20 years in an atmosphere of lively criticism—at times vague, unreasonable, and unsympathetic; at times accurate and merciless; but nearly always inescapable—in fact, healthy and stimulating by virtue of its appreciation of positive performance and its disinterest in explanations.

So great is the likelihood of our being held responsible for a better performance than is likely to occur in a climate of inadvertance or of unreflecting faith (alternating with self pity), that it could be useful to give our attention to this query: What are the simple essentials of education for public health?

I take it that the elements of an educational process are simple and straightforward. They are to be found in the nature of the students, in the nature of the teachers, and in the character of the contact between students and teachers. Time will not permit detailed and properly qualified statements on each of these factors. It must suffice to make a few comments

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upon the more important aspects of each.

The nature of the students resolves itself into their innate or natural abilities, their motivation and their previous training. In each of these qualifications we are dealing with what comes to us in large measure already formed, and therefore our most immediate task is largely that of selection.

As for the point of natural ability, I wish that the standard of performance in the course of preventive medicine in every medical school were as severe, rigorous, and important a criterion of a student's character and claim to a degree as any course in the school. And I wish that the schools of public health rejected a larger percentage of applicants and failed say 20 per cent to 40 per cent before graduation. For let us not forget that every incompetent we release into the field of public health discourages 5 to 50 better men by his colorless example and later may also obstruct the recognition and promotion of competent juniors from an all too justified feeling of his own insecurity.

As regards the motivation and sympathies of the students I have come to be a blunt heretic. A friend of mine conversing some years ago with King Albert of Belgium heard with some surprise the King say "A government which holds its chief concern to be the welfare of the people is a good government whether its form be Communist, Fascist, or Democratic, and a government which neglects the welfare of the people, whether it be Democratic, Fascist, or Communist is a bad government."

I believe that single-minded, simple, and direct concern for the welfare of the people is, as a motive in American medical schools for the guidance and stimulation of students, in part neglected and in part eclipsed by preoccupation with the demands of technic and science, and both to the detriment of the public health of our nation. Furthermore I believe that among first year students there is scattered more potential concern for public health and public welfare than is to be found in their fourth year. Until we cease ignoring the validity of sociology, psychology, anthropology, economics, government, and even comparative religion as subjects for student concern, we shall remain responsible for reducing the valences of the profession, and reducing instead of expanding the variety and excellence of the physician's capacities to combine with the public for the common welfare.

It is already clear that the present expense of a medical education has begun to affect the selection of medical students and to show not only in the predominantly upper middle class origin of medical students, but also in the predilection for the lucrative forms of practice on the part of those who may have been obliged to borrow the funds for their education. I raise serious question as to whether substantial scholarships in the schools of public health would not valuably counteract the selection which now is in force. We might reflect upon the form of appointment to the free education at Annapolis and West Point for comparison. How can we expect understanding of the underprivileged to emerge strong and tenacious and self-respecting among students who have never been underprivileged? We may expect a student to have sympathy of a sentimental sort—but not the simplicity and conviction of understanding born of experience.

The previous training of the student coming to the medical school has often more than enough of chemistry, usually enough physics and biology, but not enough mathematics, sociology, psychology, anthropology, economics, and English for his needs as a public health officer. The previous training of an

entrant to a school of public health is usually defective by reason of the status accorded to public health in his medical school. It is often then too late to change the system of values he has picked up.

I see some real advantage in assuming without rancor or recrimination that a medical course centered upon the training of men to cure illness for fees will not be naturally inclined to provide time or an adequate point of view for training men for quite a different purpose, the prevention of disease as a public salaried servant in an environment where statesmanship, social sympathy, and educational skill are also paramount qualifications. I see particular advantage in assuming that our present medical education suffers from the defects of its qualities. Such an assumption leads to the realization that improving the medical school courses in public health and preventive medicine is the decisive opportunity we have under the existing circumstances to improve recruitment and eventual performance of public health personnel.

The second element of the educational process I hold to be the nature of the teachers of public health. There again as with the students we must consider their capacities, their interests, and their training or experience. During the next 20 years we shall apply the existing practices in the selection of teaching personnel in medical schools and schools of public health, or we shall devise new forms of selecting our teachers. I hope that the criteria for professional appointment and promotion will be first: *Has he added to the knowledge in his field?* second: *Does he teach out of stimulating experience?* and third: *Is he locally convenient, congenial, coöperative, inexpensive, et cetera?* And I hope the qualifications in capacity and maturity and experience of every possible *candidate* for major teaching appointments will be a matter of wide discussion and continual investigation throughout this country so that university committees or deans charged with finding the best man available will be rewarded and not disappointed or disillusioned by extramural search and consultation.

For the training of teachers of public health in medical schools and schools of public health the preparation should be both long and broad—probably more intensive for the special men in the schools of public health and more varied and even longer for the men going into the medical schools as professors of the subject there. In order to offer adequate experience as well as a sufficient time in prearranged training, departments should have 2 to 5 positions subordinate to the full professorship and should detail their men for periods of work in city, county, state, and federal positions which give crude, direct, and realistic experience in field work. We have not yet solved the riddles of the best relation between laboratory and field work, between theory and practice, but we would be wise to explore further and report to each other our findings in this important field for discovery. I should consider interchange of junior personnel with active field units as well as with other university departments to be of the greatest value in building up the ranks from whom the future professoriate may be chosen.

The third element of educational success was noted as being the conditions under which students and teachers come together and work. This also is hard to dispose of as briefly as the limits of this talk require. I have preferred to describe as essential the conditions under which students and teachers come together and work since the finest and most valuable educational experience escapes the terminology of curriculum makers and devisers of degrees. But so serious

has grown the multiplication of degrees in the field of public health that a few comments present themselves on the subject of degrees, diplomas, certificates and the like, inadequate as they are to describe the conditions under which teacher and pupil are supposed to have met and worked together.

I take it that the purposes of a school in giving a degree or certificate are neither single nor simple. In some ways degrees are like paper money, a system of tokens, promises, or equivalents, as good and as variable as the resources of the issuing agencies. They are not the solid metal of ability or maturity. That metal is always in demand. They follow Gresham's law, and, like all tokens, are subject to counterfeit. Of course degrees serve intramural purposes in acting as a framework for courses and plans of work. They also serve as an attraction and reward for student performance. Sometimes they may be hardly more than the *quid pro quo* exchanged for conscientious attendance and the payment of tuition fees. But nonetheless they have quotation in the world outside. And then the trouble begins. Is the D.P.H. of the University of Balaclava as good as the C.P.H. from Karshish College? Why? What does a Diploma in Public Health mean? If the D of M.D. means Doctor how is the public to be expected to know that the D in D.P.H. mean Diploma? Do not doctors get diplomas when they graduate? May D stand for deception? And certificates in public health—do they assure a knowledge of statistics or guarantee an ignorance of medicine? Always? Sometimes? Or never? Does the Dr.P.H. really exclude the possibility of flagrant incompetence or is it sometimes rather a proof of some exceptional special ability? Can we deny the confusion there is to laymen in such a mixture of certificates and diplomas among bachelors, masters, doctors, and doctors who are not what the layman calls doctors at all? Without deceiving ourselves at all we shall manage to mislead the public as the initial step in serving them. We cannot just assume that the triumphs of preventive medicine are so great as easily to survive the ludicrous spectacle we present of 13 different degrees in public health given by 10 different institutions in the United States.

Something far simpler is needed by the public we want to work with. Let us start our service by being simply understood in the estimates we make of our pupils' qualifications. What are the essential needs? What would the public understand?

The individual not possessing a medical degree who spends at least a full year in public health courses designed for his or her level of training, and who passes appropriate tests, practical as well as oral and written, should be given a certificate or master's degree in public health. I do not believe in any title for studies over a shorter period than a year. Why should we underwrite inadequacy?

The degree of Doctor of Public Health should be confined to persons already possessing the M.D. and should be so planned and so awarded as to constitute a guarantee of competence to undertake the duties of health officer in city, county, state, and federal health services. It should involve field experience as well as university instruction and be an assurance comparable to and perhaps better than that given by the specialty boards now and in the future in other fields of medicine.

In all matters of licensure, certification, and degree giving, it is remarkable to see how common is the confusion between what is intended to give protection to the public and what is intended to give distinction to the individual. Both types of denomination have very great value to science and to

society at large. But it is the hallmark of educational stupidity to withhold distinction from the onesided specialist or to imply all around competence where it does not exist. Both kinds of degrees should be rigorous if they are to convey an honorable status to the recipient. The difference between what I call distinction and all around competence lies in the measure of responsibility the recipient may be expected successfully to assume for the manifold and variant duties of a health officer. I should like to see the C.P.H. or M.P.H. and the Doctorate of Public Health and only these, as rigorous guarantees of measured and certain degrees of competence. For distinction, however, as a specialist or contributor to knowledge in some special field, it would be valuable to have the Doctor of Science in Public Health. Then the public could begin to know where we are and what to look for as qualifications.

As a degree of special distinction and difficulty the Doctor of Science in Public Health could be honestly given in a few medical schools and the schools of public health. It would be of use in training and denomination of candidates for professorships and positions in research laboratories. It should be neither common nor easily obtained and thus become a mark of acknowledged competence in research and scholarly attainment.

This is all the public can both understand and respect. For in the oncoming realities of public health, what will make the difference is the lay and professional opinion held of teachers and practitioners of preventive medicine and public health—of their native ability, of their characters, and of the excellence of their training or the breadth of their experience. Let us see to it that our degrees exactly reflect such opinions.

We need not go beyond that. I am not concerned here with "credit hours" nor the itemized content of the curricula. What seems important to me I have mentioned—that we pay attention to the capacities, motives, sympathies, and previous training of our students; that at present we accept fewer candidates for degrees because we know that quality attracts quality and imitations will discredit us and ruin the status of our degrees; that we give the most serious attention to the preparation of future teachers, especially in the medical schools; that we realize that degrees have meaning outside as well as inside the institution and that they are only valid when they are understood, and valuable as long as they stand sincerely for the things of real value—capacity, sympathy, and experience. And above all let us seek for simplicity, thoroughness, and realism in the service we offer to the public in teaching its servants a kind of medicine still new and still under-rated.

The Trained Worker Goes to Work*

W. P. SHEPARD, M.D., F.A.P.H.A.

Assistant Secretary and Pacific Coast Welfare Director, Metropolitan Life Insurance Company, San Francisco, Calif.

IT has been my privilege for some years to be associated with both the producing and the consuming ends of public health work. I have been a city health officer and have done part-time public health teaching both to medical students and health officer trainees. My present work brings me in close touch with public health officials, especially in the western states. The following observations are entirely empirical, but are based upon experience and sympathetic analysis.

First, it must be said that the presence of trained young men in the field is rapidly changing the whole public health picture. It reverses the vicious cycle which has hindered us so long; that is, health officer incompetence, insecure tenure, inadequate appropriations, lack of results, still less adequate appropriations, greater incompetence, less secure tenure. Many have felt that this cycle could best be broken by increasing the competence of the health officer, since this will generally improve results and thus lead to increased appropriations and improved tenure. These more competent young health officers are reversing the process described by Dr. Gregg by *encouraging* "five to fifty better men" to enter the field, and by *accelerating* the "recognition and promotion of competent juniors." They are also improving the status of our profession in relation to other professions, especially practising physicians, teachers, and statesmen.

It is a pleasure to report that these young men are generally well trained in the scientific aspects of their work. They have learned remarkably well what public health stands for and what it aims to do. They show a surprising ability to apply their clinical experience to public health work and to think of the health of the group rather than of individuals. This is a great tribute to their teachers.

NEW HEALTH OFFICERS' PROBLEMS

Their problems are largely those of application. They know pretty well what to do, but not always how to do it. Hence, their major problems lie outside the field of their scientific training. These problems may be classified under four headings: statesmanship, education of the public, administrative, and personal. Their professional public health problems are less troublesome, less time-consuming, and less menacing than these.

Statesmanship—A surprising number of problems have to do with statesmanship. These include such matters as health officer relationships with superiors and colleagues in the local governmental unit, with medical societies, other organized groups, and with people generally. Analysis of mistakes made in handling these problems

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usually discloses lack of understanding of individuals or groups, often a lack of tolerance for those holding divergent views, sometimes unwitting or injudicious involvement with entangling alliances.

Professor Terman,[1] who has followed a group of gifted children for more than 20 years, concludes that given superior intelligence, "then the social factors and ambition, drive, and emotional balance are the main determiners of success and failure." In other words, the ability to work with people is important, in addition to intelligence. Whether we can teach the technics of working with people may be open to question, but it is a quality which should be a prerequisite to a health officership.

Ability to work with people is but a part, though an important part, of health officer competence. One health officer, now gone, lacking both competence and appropriation, took me to a meeting of his appropriating body. He was greeted by the chairman, saying, "Hello, Doc, what can we turn you down on today?" followed by three defiant, long-distance shots at the cuspidor by other members of the board. He did not get what he asked for. Another health officer of my acquaintance, known nationally for his competence and achievement, and, incidentally, lacking any academic public health degree, has had to explain to his appropriating body more than once why he considers it unwise for them to increase his salary. What is our training doing to increase the number of health officers like the latter and decrease the number like the former?

Is it possible that the public health professor's own secure tenure gives him a fine disdain for what he calls politics?[2] Is this disdain unconsciously transmitted to the student with the result that the ability to work with people is undeveloped and his competence thus hampered?

Two-thirds of the name "public health officer" consists of "public officer." Perhaps two-thirds of his duties consist of being a "public officer." But more than two-thirds of his training is on "health," a third of his title and perhaps only a third of his duties.

Education of the Public—Educational problems are often unrecognized as such by the recently trained health officer, but they exist in profusion. What appears to be lack of public support is often an educational problem of the first magnitude. The task of presenting health department objectives and needs convincingly at all times is largely an educational process. Leading the public to better health habits, improved health attitudes, enlightened health knowledge, and improved health behavior, all require educational ability. To do these successfully, the health officer, like the educator, must:

1. Determine, and limit himself to the hearers' ability to understand.
2. Adhere to simplicity for each level of understanding.
3. Remember that his criterion of success is the extent to which his presentation changes the recipients' choices, actions, and attitudes, not the effectiveness with which the known body of knowledge is summarized.
4. Aim for a lag between stimulus and response so that the response becomes a conscious, intelligent control over conduct, instead of being instinctive or habitual.
5. Start with the intellectual approach, devoid of emotion, in order to avoid emotional fixation. Emotional fixation is the method of dictators. Rather than being educational, it blocks further education.[3]

These are well recognized procedures in the teaching profession.

Educators have made great advances in understanding the learning process. They analyze and avoid the subversive forms of propaganda. They recognize that experience is the only real teacher. It is the aim of education to use the learner's own experiences to produce education. These are principles in-

herent in the educational process, regardless of the learner's age. They apply not only to school children but to adults as well. That the health officer needs these principles is apparent when we observe the sins committed by many in the name of health education. Among these are:

1. Evangelism, or direct emotional appeal. This is often effective to attain immediate ends, but it is far from education.[4]

2. Oracularity, in which the health officer, like many other physicians, seems to have an insatiable craving to tell others of his superior knowledge. This has led to the slang defensive phrase of youth, "Are you telling me?" Many dislike to be "told." When they are told, it seldom influences their choices, actions, and attitudes; hence, it is not education.

3. "Talking down" to groups. This is invariably distasteful and not education.

4. Talking over the heads of groups. This sometimes leads to desired results, but is bad manners and not education. When it leads to results, it is because the listeners believe in the sincerity of the speaker, not in what he says.

5. Failure to use health service as an educational instrument. Every service rendered by a health department has potential educational value, but it becomes educational only by the deliberate planning of those in charge. A health department vaccination clinic may result in many protected people, but it has educated its patrons only if they are thenceforth more prone to seek and obtain vaccination of their own volition.[5]

Medical schools have been slow to adopt the technics of modern education. Will public health schools do likewise?

Administrative—Administrative problems, though less frequent than political and educational, are often unrecognized or badly handled. No full-time health officer works without subordinates, and the further up the ladder he goes the more personnel he has to handle. Industrial relations or personnel management is no longer a rule-of-thumb procedure. The health officer is entitled to something more than learning by chance or by example (which may be bad as often as good) what is commonly accepted as good management.

Good business sense is often lacking in health officers. Appropriating bodies are prone to consider the young health officer an earnest, agreeable fellow, but "no business-man." Some knowledge of bookkeeping methods, of cost accounting, taxation and public revenues, values of and responsibility for public funds and property are nearly as essential to the health officer as a knowledge of laboratory procedure and computing vital statistics. Business acumen will earn the health officer the respect and support of his superiors, colleagues, and subordinates.

The health officer is, then, of necessity, a business-man. Has he benefitted from association with teachers of business administration?

Personal — Finally, a few health officers seem to lack genuine, impelling faith in the cause. That their number is small is a tribute to public health teachers and to those responsible for selecting trainees. These few have somehow escaped the conviction that the game is worth the candle. One wonders if they will have the fortitude to withstand the woes which are inherent in any public service and are indigenous to public health. No group in this country has shown greater courage or greater devotion to a public cause than the old-time health officers who have held office for many years. They have borne, with little complaint: insecurity, inadequate income, niggardly appropriations, political and personal vituperative attack, changes of superiors with each political upheaval, the demands of an exacting and none too considerate public, the irritation of public and official stupidity, the dangers of deadly epidemics. One hopes that among our recruits of today we are numbering and developing more Chapins, Bundesens, Chesleys, Emersons, Bishops, Browns, Parrans, Mc-

Cormacks, and Godfreys.[6] It seems essential that somewhere in the course of his training every student should be inspired by that faith in the cause which comes from inspired teachers and associates who "teach out of stimulating experience."

SUMMARY

These observations on the political, educational, administrative, and personal problems of our younger health officers lead to the following suggestions by way of summary:

1. We must all agree with Dr. Gregg's plea for better selection of candidates for health officer training. Under present arrangements for federal aid, this is not entirely the responsibility of the school. Candidates receiving federal aid are selected by the state health officers. Some state health officers have had difficulty in obtaining suitable staff members and have found it necessary for many years to do the best they could with any who were interested. With the advent of federal training for public health personnel and the increase of economic problems in the private practice of medicine, together with the tendency of modern youth to think more collectively, many young men of fine character and ability are now available. There seems no need longer to select any but the best.

2. The health officers' training must, of course, be technically complete and intensive. However, few health officers fail because of lack of professional knowledge. In fact, the well entrenched health officer can get along with surprisingly little technical knowledge. Few health officers can get along without considerable knowledge of statesmanship, political science, psychology, personnel management, and business administration. This knowledge will be better organized and more useful if more provision is made for gaining it in the curriculum rather than leaving it to hit-or-miss observation. For instance, a frank study of politics "as is," together with consideration of the theories of government, will help fortify the health officer against disillusionment and to maintain his balance. These need not be long courses, but should be specially prepared for health officer needs.

3. It is surprising how little we really know about the job of being a health officer. Would it not be worth while to make a careful job analysis of several health officers' work such as is done with important positions in many industries? Having determined precisely what the average health officer does, how much time he spends on each of his known professional functions, how much time and in what manner he spends that time on his administrative duties, what his major problems are during the course of a year, we may then be in a better position to teach what he needs to know. If we might add to this a careful study of health officer success and failure, analyzing the causes underlying each, we might then keep our curriculum an active, vital factor in helping graduates to meet life situations.

4. Is it altogether necessary to surround the granting of a degree with pomp and circumstance? May it not be that graduate students, like elementary pupils, will show varying speeds of learning? May not some be ready for the degree in 9 months, while others may need 18? The completion of certain units with a certain grade on examination may shed little light on actual achievement and ability. Some may need more experience and less classwork, others more of both. Could not the degree be granted without ceremony at any time when the faculty and the state health officer are satisfied with the student's achievement?

5. An understanding of modern health education methods is one of the

most urgent needs of all health officers. Since the transition of public health from the legislative to the educational era, education has become one of the most important functions of the health department. It will remain an important function long after most of the contagious diseases and sanitary problems are conquered.

The science and art of education have advanced so rapidly that public health schools have failed to keep pace with modern methods. Today's health officer should be better equipped than anyone else in his community to help organize adult health education. He should be prepared to confer with teachers in their own language and to provide means of coöperating with the school health education program. If we bear in mind that the purpose of health education is to improve health behavior, and if we measure results to date in terms of that improvement, we shall be shocked with the extent of our failure. Considerable time should be devoted, therefore, to teaching our trainees modern educational methods.

6. One way for the trainee to learn and benefit from modern educational methods is to be subjected to them himself. For this, the graduate course in public health offers unique opportunities. We deal with men and women who have undergone rigorous and prolonged schooling. They are the survivors of a careful system of selection and elimination. They are, therefore, comparatively well educated. They have trained minds. They are intelligent. They have an unusual degree of motivation. We may assume that they are a select product of our educational system. We need not be concerned with the century-old educational conflict between cultural and professional elements. These students come to us for graduate professional training, for specialization.

This is the place for us to recognize that "a coherent structure of thought and an integrated pattern of behavior are necessary to give meaning to specific facts and skills."[7] This is the place for us to build a curriculum which will meet the ultimate test of true knowledge. Is this knowledge useful in life situations? We must provide actual experience outside the classroom in order to stimulate students to use books and laboratories intelligently. Such experience must be suited to each individual's needs and based upon the relative fertility or sterility of his previous training. We must measure progress by actual achievement rather than by grades and units. We must recognize that the only curriculum which is educative in the long-run is that which provides for a large measure of self-education. We must ask ourselves: "Do our graduates come out with a vision of what society might be, tempered by an understanding of things as they are, and implemented by a commitment to some specific undertaking wherein each can effectively take hold?"[8] Only when this question can be answered in the affirmative will our academic degree carry some of the guarantee of measured competence to which Dr. Gregg referred. Whether that degree, then, is a C.P.H. or an X.Y.Z. will matter little to the school, the recipient, or the public.

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Development of Tuberculosis in Infected Children*

ALTON S. POPE, M.D., F.A.P.H.A., PHILIP E. SARTWELL, M.D., AND DAVID ZACKS, M.D.

State Department of Public Health, Boston, Mass.

IN laboratory animals where time of infection and dose of bacilli can be controlled there is substantial agreement that primary infection with tuberculosis, if not overwhelming, results in a measurably increased resistance to subsequent inoculations with tubercle bacilli.[1, 2, 3] In man the picture is less clear. Although the typical parenchymal infiltration of primary infection, followed by resolution, fibrosis and calcification, is not infrequently observed roentgenologically, the exact date of reinfection and the duration of exposure are rarely known, and the dosage of bacilli is wholly problematical. Furthermore, it has not been demonstrated how far the results of inoculation experiments with tuberculosis in laboratory animals can be applied to natural infection in man.

From a public health standpoint the relationship between primary infection with tuberculosis and the development of subsequent progressive disease has become a problem of major importance. Is a primary infection acquired during childhood a relative safeguard against subsequent exposure? or does the sensitization acquired through such infection result in increased susceptibility to destructive lesions?

Much evidence might be cited to support both opinions, and the epidemiological findings so far reported appear to be contradictory.[4-9] Obviously the answer is not simple and the diversity of opinions based on extensive studies at least suggests that the end results may be strongly conditioned by such variables as the type of population exposed, the level of tuberculous infection in the community, and various environmental factors. Such complications make it difficult to compare directly the findings of different investigators, but for practical purposes the amount of tuberculous disease which in sufficient periods of time develops in properly controlled population groups appears to be the best measure of the significance of childhood infection in the evolution of phthisis.

In connection with its field clinic work on tuberculosis in school children, the Massachusetts Department of Public Health has during the past 15 years attempted to collect evidence on the relationship of childhood infection to the subsequent development of progressive tuberculosis in adolescents and young adults. On account of the long, indeterminate incubation period of tuberculosis and the slow development of clinical disease, it has been necessary to employ epidemiological methods which would give a perpendicular rather than the usual horizontal picture of the situation. The main object has been to obtain a quantitative measurement of

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the amount of progressive tuberculous disease subsequently developing in large groups of children examined in the clinics, classified according to age and sex, the initial reaction to the tuberculin test, roentgenological evidence of tuberculous disease, and known household contact with tuberculosis.

The basic material to be presented consists of the data on some 400,000 school children tuberculin tested in the Chadwick Clinics between 1924 and 1934, the reëxamination of certain groups of these children, and the cases of pulmonary tuberculosis subsequently reported in the entire group. During the first 3 years of the clinic children were selected for examination on the basis of known exposure to tuberculosis, underweight of 10 per cent or more, definite or suspicious symptoms or signs of pulmonary disease. For the next 2 years all school children for whom consents were received were examined, irrespective of special indications. During these 5 years complete physical examinations were made on all children examined, in addition to the von Pirquet test and roentgenogram of the chest of all positive reactors. During the last 5 years examination was limited to the tuberculin test of all children, with X-ray of reactors and physical examination only for children with positive roentgenograms. All children with roentgenological signs of either childhood or adult type tuberculosis were reëxamined annually with X-ray of the chest, and

TABLE 1

Reported Cases and Deaths from Tuberculosis in Children Previously Tested in Clinics, Excluding Those Who Had Tuberculosis When First Tested

	Number Originally Tested 1924–1934	*Cases Subsequently Reported 1924–1936*	*Deaths from Tuberculosis 1924–1936*	*Total Known Tuberculosis*
All tested	400,330	319	100	419
Reactors	99,769	189	52	241
Non-reactors	300,561	130	48	178

TABLE 2

Rates per 100,000 Children Tested

	Living Case Rate	*Death Rate*	*Rate for All Cases*	*Case Fatality Rate, Per cent*
All tested	79.7± 4.5	25.0±2.5	104.7± 5.1	23.9
Reactors	189.4±13.8	52.1±7.2	241.6±15.6	21.6
Non-reactors	43.2± 3.8	16.0±2.3	59.2± 4.4	27.0
R+ / R−	4.4	3.2	4.1	

TABLE 3

Distribution of Deaths from Tuberculosis

	Total	*Non-reactors*	*Reactors*
Median interval between test and death in years	5.7	5.9	5.6
Deaths 1– 3 years after test	18	8	10
" 4– 6 " " "	36	21	15
" 7– 9 " " "	34	16	18
" 10–12 " " "	11	6	5
Males	27	14	13
Females	73	39	34

whenever possible followed to the end of their school life.

The problem has been approached from several angles and the data are presented in the form of two series of observations:

1. Reported subsequent morbidity and mortality from tuberculosis in the entire group of children tested
2. The development of tuberculosis in children under annual observation of the clinic

FIRST SERIES

Soon after the beginning of the Ten Year Program an alphabetical-geographical card index was set up for all children examined in the clinics, making it possible to check any subsequent developments against a child's status at the time of first examination. By means of this index all cases and deaths from pulmonary tuberculosis reported in Massachusetts from 1924 to 1936, inclusive, in the age groups covered by the Ten Year Program were checked to determine whether the individuals in question had ever been examined in our clinics. The diagnosis of tuberculosis in each report or death certificate was confirmed before it was included in the study. Thus a list was established of verified cases and deaths from tuberculosis which had developed in a period of 13 years in a group of some 400,000 children. The morbidity and mortality in this group up to 1934 have been reported previously by one of us.[10] It is probable that the reporting of cases is somewhat more complete in the group of reactors followed in the clinic than in the general population, but there is certainly no such weighting of the deaths reported. The cases and deaths from tuberculosis, together with morbidity and mortality rates, according to the tuberculin reaction on first examination are shown in Tables 1, 2 and 3.

In spite of the significantly higher morbidity and mortality among the children who reacted to the initial tuberculin test, the case fatality rate has been slightly higher among cases in children originally tuberculin negative. This would appear to cast some doubt on the benign character of first infections acquired between the ages 6 and 16. It will be noticed that the median interval between the tuberculin test and death in fatal cases is essentially the same among the originally negative and originally positive reactors.

SECOND SERIES

Of the children tested, X-rayed, and examined in the school clinics, a large number were, for reasons given above, kept under annual observation with X-rays and physical examinations. For statistical analysis all those were selected who did not have pulmonary tuberculosis or non-tuberculous pulmonary disease on first examination and who were reëxamined by X-ray at least once a year or more subsequently. A total of 19,346 satisfied these requirements. Their mean age at the beginning of the period of observation was 11.4 years, and the mean period of observation was 3.4 years, with a maximum of 11 to 12 and a minimum of 1 to 2 years.

While these observations are based on a large experience, they have certain limitations which should be pointed out. The von Pirquet test was used throughout the study; however, specially trained physicians made both the tests and the interpretations, and multiple tests were often performed. Cases were classified as "contact" when a history of exposure to tuberculosis at any time since birth was obtained from either the parents or health department, and it was usually not possible to verify this by examination of the supposed contact or to find previously unsuspected sources of infection. In the majority of cases listed as contacts, contact had been broken when the child came under observation. A positive contact history was obtained in 33.9 per cent of the

TABLE 4

Cumulative Morbidity
Whole Group

Years of Observation x	*Number at Beginning* l_x	*Number Withdrawn During Year* w_x	*Number Developing Tuberculosis* d_x	*Average Number Under Observation During Year* $l_x - \frac{w_x}{2}$	*Per cent Developing Tuberculosis During Year* $100q_x$	$100p_x$	$100P_x$	*Per cent Cumulative Morbidity* $100\ (1-P)_x$
1– 2	19,346	3,060	21	17,816	0.118	99.882	99.88	0.12
2– 3	16,265	4,262	33	14,134	0.233	99.767	99.65	0.35
3– 4	11,970	3.937	28	10,001	0.280	99.720	99.37	0.63
4– 5	8,005	3,249	23	6,380	0.361	99.639	99.01	0.99
5– 6	4,733	2,025	21	3,720	0.564	99.436	98.45	1.55
6– 7	2,687	1,286	15	2,044	0.734	99.266	97.73	2.27
7– 8	1,386	655	10	1,058	0.945	99.055	96.81	3.19
8– 9	721	367	7	537	1.303	98.697	95.55	4.45
9–10	347	202	2	246	0.813	99.187	94.77	5.23
10–11	143	91	1	97	1.031	98.969	93.79	6.21
11–12	51	49	2	26	7.692	92.308	86.58	13.42

TABLE 5

Cumulative Morbidity Rates from Tuberculosis Among School Children According to Sex, Tuberculin Reaction and Roentgenological Findings at First Examination

Years of Observation	*Total*	*Males*	*Females*	*Negative von Pirquet* *	*Positive von Pirquet*	*Positive von Pirquet Negative X-ray*	*Positive von Pirquet Positive X-ray*
1– 2 Years	0.12	0.11	0.12	...	0.13	0.04	0.23
2– 3 "	0.35	0.22	0.46	...	0.38	0.10	0.68
3– 4 "	0.63	0.40	0.82	...	0.68	0.16	1.21
4– 5 "	0.99	0.58	1.32	...	1.05	0.30	1.80
5– 6 "	1.55	0.82	2.13	...	1.63	0.74	2.49
6– 7 "	2.27	1.14	3.18	...	2.38	0.86	3.67
7– 8 "	3.19	1.72	4.41	2.4	3.24	0.86	5.09
8– 9 "	4.45	3.19	5.47	2.4	4.55	1.36	6.89
9–10 "	5.23	4.02	6.21	2.4	5.36	2.44	7.54
10–11 "	6.21	4.02	8.12	2.4	6.40	2.44	9.08
Mean age of group at beginning of observation	11.43	11.51	11.38	10.38	11.52	11.43	11.65
Mean period of observation	3.4	3.3	3.4	2.8	3.5	3.4	3.6

* Only one breakdown occurred in this group.

TABLE 6

Cumulative Morbidity After 7–8 Years According to History of Exposure

	Contacts		*Non-contacts*		*Combined*	
	Number Developing Tuberculosis [1]	*Per cent Morbidity*	*Number*	*Per cent*	*Number*	*Per cent*
All cases	106	5.1	45	1.8	151	3.2
Males	23	2.4	16	0.48	39	1.7
Females	83	7.5	29	2.31	112	4.4
Original non-reactors	1	5.0	..	....	1	2.4
Original reactors	105	5.3	45	1.9	150	3.2
With negative X-ray	15	1.5	7	0.6	22	0.9
With positive X-ray [2]	90	7.7	38	3.0	128	5.1

1. This applies to all cases developing pulmonary or extrapulmonary tuberculosis during study, and includes those who have subsequently died.

2. " Positive X-ray " here refers to those who when first tested and examined showed old childhood-type lesions in parenchyma, hilum, or both locations. These were generally calcified, and might be single or multiple.

GRAPH 2
CUMULATIVE MORBIDITY BY SEX
Boys
Girls
10.0
1.0
0.1
1-2
5-6
10-11
Years of Observation
GRAPH 1
CUMULATIVE MORBIDITY IN ENTIRE GROUP UNDER OBSERVATION
10.0
1.0
0.1
1-2
5-6
10-11
Years of Observation

cases of childhood type tuberculosis, in 27.4 per cent of the reactors with negative X-ray, and in 67.7 per cent of the non-reactors in this series; the high figure for non-reactors means of course that the usual reason for keeping them under observation was a contact history.

Two methods of analysis were applied to determine the frequency of breakdown from tuberculosis. The first, or cumulative morbidity method, was suggested by Frost and used by Brailey [11]; a description of the mathematics involved is given by Puffer, Stewart, and Gass.[12] Table 4 illustrates its application to the entire series; Table 5 shows the cumulative morbidity as derived in the last column of Table 4, by years for each group. While some children were followed for 11–12 years, the figures for the last few years are unduly influenced by a single breakdown, since the number remaining under observation is small; therefore in Table 6, which divides the groups according to contact, the morbidity is taken only at the end of 7–8 years of observation. Since no differences were noted in the distribution of cases of pulmonary tuberculosis and of other reinfection forms of the disease, all are included together in the tables. There was a total of 142 pulmonary cases, 8 pleural effusions, and 13 extrapulmonary cases; 31 deaths from tuberculosis occurred during the study.

As this method takes into account years of observation but not age, it was felt that another approach based on age might further illuminate the problem. The method adopted is one used by Herlitz [6] and is illustrated in Table 7.

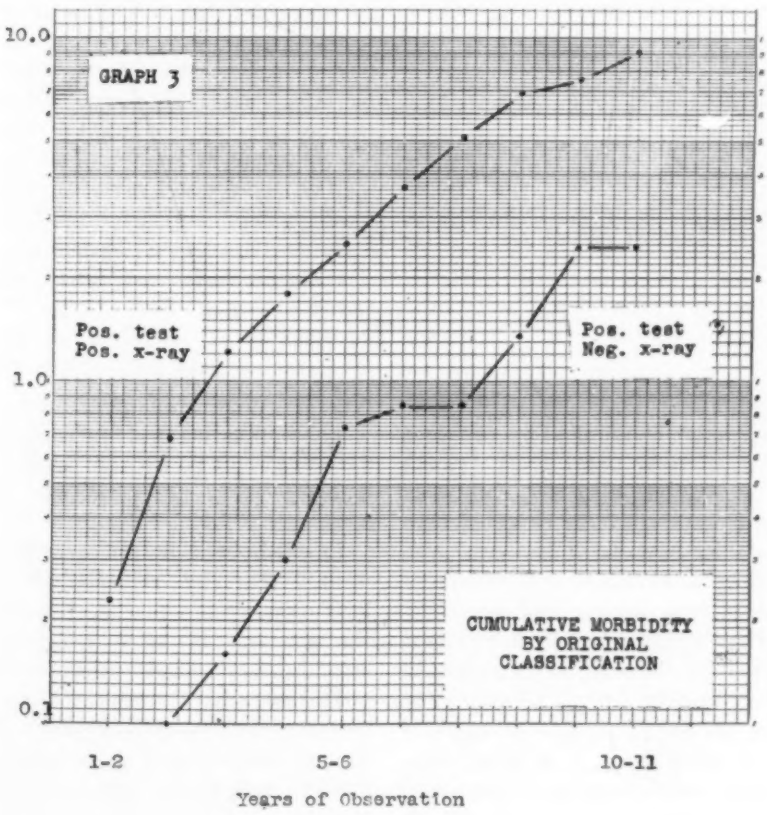

TABLE 7

Age-specific Morbidity from Tuberculosis in Reacting and Non-reacting Children

Age	Group I Original Reactors: Number Under Observation	Group I Original Reactors: Number Developing Tuberculosis	Group II Original Non-reactors: Number Under Observation	Group II Original Non-reactors: Number Developing Tuberculosis	Expected Cases Among Non-reactors
6	90	0	26	0	0.0
7	556	2	117	0	0.4
8	1,470	0	287	0	0.0
9	2,603	0	390	0	0.0
10	3,968	6	454	0	0.7
11	5,288	10	478	0	0.9
12	6,616	8	503	0	0.6
13	7,806	14	519	0	0.9
14	8,464	22	466	0	1.2
15	8,245	24	409	0	1.2
16	6,754	27	298	0	1.2
17	4,632	18	202	0	0.8
18	2,601	10	221	0	0.8
19	1,324	12	47	1	0.5
Total		153±12.4		1±1	9.2±0.7
Difference=8.2±1.2					

TABLE 8

Observed and Expected Cases of Tuberculosis (All Forms) Developing Subsequent to Initial Examination According to Sex, Tuberculin Reaction, X-ray Findings and Contact

Age 6–19

	Contact Group	Non-contact Group	Combined Group
Total number of cases developing tuberculosis	111	43	154
Number of males developing tuberculosis	26	16	42
Number of males expected to develop tuberculosis based on female morbidity rates	77.7	21.8	95.4
Difference	51.7±9.8	5.8±5.8	53.4±11.4
Number of cases of tuberculosis observed among non-reactors	1	0	1
Cases expected based on morbidity rates of original reactors	12.0	1.7	9.2
Difference	11.0±1.6		8.2±1.2
Cases observed among original reactors with negative X-ray	18	7	25
Cases expected based on morbidity rates of reactors with positive X-ray	72.9	39.9	123
Difference	55.4±8.8	32.9±7.2	98±12
Cases observed in non-contact group			43
Cases expected in whole non-contact group based on morbidity rates of contacts			212.3
Difference			169.3±21.1

The number of children under observation at each age is obtained by counting each child as many times as he is years under observation; e.g., if a child was followed from 8 to 10, he is included in the totals for ages 8, 9, and 10. The observations were carried only to age 19 although a few persons had been followed into adult life. The expected number of breakdowns at each age in a group of known size can be computed from the age specific morbidity rates of the group with which it is being compared, and its difference from the actual observed number of breakdowns noted. Table 8 presents a comparison of the major groupings by this method, and Table 9 gives the morbidity rate by ages.

It will be seen by reference to Tables 4 to 9 that the incidence of tuberculosis remains at a low level up to about the age of 10, after which it rises steadily, and much more rapidly in girls than in boys. It is this lag between infection and the development of active disease which makes the relationship so difficult to appraise. Many children are

TABLE 9

Morbidity by Age

Age	Number Under Observation	Number Developing Tuberculosis	Per cent Morbidity
6	116	..	...
7	673	2	0.3
8	1,757	..	...
9	2,993	..	...
10	4,422	6	0.1
11	5,766	10	0.2
12	7,119	8	0.1
13	8,325	14	0.2
14	8,930	22	0.2
15	8,654	24	0.3
16	7,052	27	0.4
17	4,834	18	0.4
18	2,822	10	0.4
19	1,371	13	0.9

lost from observation before they reach an age at which they are likely to develop tuberculosis, and among those who are followed it is often impossible to determine with any certainty the time and degree of any subsequent exposure. All of our evidence indicates that in school children it is the age of the individual rather than the time of exposure or any environmental factor which determines the time at which tuberculosis develops. It will also be noted that the incidence of tuberculosis is higher among original reactors to the tuberculin test than among non-reactors, and significantly higher among those whose original X-rays showed evidence of childhood type tuberculosis than among reactors with negative films; and that it is higher in each group among contacts than non-contacts.

SUMMARY AND CONCLUSIONS

In a group of some 400,000 Massachusetts school children tuberculin tested in the period 1924–1934 the subsequent reported morbidity and mortality from tuberculosis has been determined to the end of 1936, and rates have been computed on the basis of the original reaction.

Among the reactors the morbidity from adult type tuberculosis has been approximately 4 times that in the non-reactors. The death rate has been 3 times as great in the reactors, and the case fatality essentially the same in the two groups.

The cumulative morbidity from tuberculosis in children reëxamined annually for 10–11 years was over 6 per cent. This rate was approximately twice as high in females as in males, was substantially higher among reactors than among non-reactors and among reactors was over 3 times as high in those with originally positive roentgenograms.

For this second series the tuberculosis morbidity among children with a history of family exposure to the disease was 2½ times that in children without known exposure.

Age specific morbidity rates in the series show that significant tuberculosis in school children is infrequent below the age of 10, that the incidence rises rapidly after this age, and much more rapidly in girls than in boys.

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Food Poisoning Due to Staphylococci

With Special Reference to Staphylococcus Agglutination by Normal Horse Serum*

GLENN G. SLOCUM, PH.D., AND B. A. LINDEN

Associate Bacteriologist; and Assistant Bacteriologist; Food and Drug Administration, U. S. Department of Agriculture, Washington, D. C.

SINCE 1930, when Cary, Dack, Woolpert, and Wiggers[1] demonstrated that staphylococci are capable of causing food poisoning, many outbreaks have been recorded in the literature in which these organisms have been incriminated. There is little doubt that staphylococci are the most frequent causes of food poisoning in the United States at the present time. A survey of the literature on staphylococcus food poisoning indicates that bakery products, particularly those containing a cream or custard filling, have most frequently been involved in this type of food poisoning, although various other food products, such as milk,[2, 3, 4] gravy,[5] cheese,[6] and meat,[7] have been occasionally incriminated.

It is the purpose of this paper to point out another type of food product which, in the experience of the authors and their associates, is involved so frequently in staphylococcus food poisoning as to warrant particular attention. During the past 4 years and particularly during the past 2 years the Division of Bacteriology of the Food and Drug Administration, U. S. Department of Agriculture, has been called upon to conduct laboratory examinations of specimens of the so-called "ready to eat" hams which were collected in connection with food poisoning outbreaks. In every instance in which the epidemiological evidence definitely implicated ham as the food involved in the outbreak, laboratory investigation has revealed the presence of large numbers of staphylococci, which were demonstrated to be food-poisoning types, either by feeding sterile culture filtrates to young cats or by the intraperitoneal injection of boiled filtrates into kittens or young cats as described by Dolman, Wilson, and Cockcroft,[8] and Dolman and Wilson.[9]

Up to the present time 10 such outbreaks have been studied, 8 of which have occurred during the past 2 years, and 5 of these during the past summer. In addition to the above outbreaks in which laboratory investigations were conducted, we have in our files reports on 8 additional outbreaks in which, although samples were not available for examination, the epidemiological evidence, symptomatology, incubation pe-

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The data pertaining to the studies on food poisoning staphylococci are taken from a thesis presented by Glenn G. Slocum, in June, 1939, to the faculty of the Graduate School of the University of Maryland, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

riod, and other information leave little doubt that they were caused by staphylococci.

Two further outbreaks were investigated which are of interest in that they followed the consumption of beef tongue, a salt-cured meat product. One of these outbreaks was investigated and reported by Dack, Bowman, and Harger.[7]

In all, these 20 outbreaks in which ham and beef tongue were implicated, affected at least 1,028 individuals. Two deaths occurred among these victims, neither of which was attributed directly to food poisoning, but rather to other complicating conditions.

In many of the outbreaks studied in this series there is little evidence to indicate the source of the staphylococci or when, in the process of manufacture, distribution, and handling prior to consumption, the organisms gained entrance into the products. In many instances there appears little doubt that the formation of enterotoxin, and perhaps even the contamination of the meat, resulted from improper handling in the hands of the consumer. In other outbreaks the evidence suggests that contamination occurred prior to the time the meat reached the ultimate consumer. The problem does not appear to be peculiar to any particular manufacturing plants, but rather to the type of products involved.

Although the literature does not contain many references dealing with staphylococcus food poisoning in which ham or related salt-cured meat products have been involved, we have reason to believe that such products are quite commonly the cause of food poisoning but have failed to receive publicity or attention. Stone [10] has reported 7 outbreaks caused by consumption of "baked" ham or related salt-cured meat products in which he has demonstrated enterotoxic staphylococci as the probable cause. Personal conversations or communications with various public health workers have revealed that it is not uncommon to encounter such outbreaks frequently during the summer months.

Kelly and Dack [11] conducted a study to discover whether staphylococci would grow and produce enterotoxin in meat sandwiches as a result of the outbreak reported by Dack, Bowman, and Harger [7] in which pickled beef tongue sandwiches were involved. They noted that staphylococci were the predominating contaminants in salt-cured ham and tongue and demonstrated that staphylococci would grow in such products in which the salt concentration was sufficient to prevent the growth of bacilli. They further demonstrated that staphylococci would develop in sandwiches and produce enterotoxin therein. Therefore, it appears that ham is a favorable medium for growth and production of toxin by these organisms.

In the course of laboratory investigations of the above mentioned outbreaks, as well as others in which a variety of food products were implicated, we have been constantly impressed, as have other workers in this field, with the need for more simple and rapid laboratory procedures for the identification of food-poisoning staphylococci.

Recognition of this need led to the study by the senior author of a series of 37 cultures isolated from specimens of ham and other food products involved in 11 outbreaks of food poisoning. All but 2 of the 37 cultures were considered enterotoxic strains at the time of isolation, as indicated by toxicity tests, but in 2 instances evidence of toxicity was based only on the bacteriological and epidemiological investigations. A study of the ability of these strains to produce enterotoxin revealed that during storage on laboratory media the great majority of the strains had lost this characteristic. It also appeared that storage had diminished the ability of the majority of the strains to liquefy gelatin actively,

that is, to produce a positive Stone reaction on Bacto Stone's extract gelatin agar. Only 3 strains produced definite positive Stone reactions, and of these, only 2 produced enterotoxin, as determined by the technic described by Dolman and Wilson.[9] Three strains isolated from a specimen of ham during the course of this investigation, while capable of producing enterotoxin, did not produce a positive Stone reaction. On the basis of these two properties the strains in this collection could be divided into 4 types. Thirty-one strains were enterotoxin negative, Stone negative; 1 strain enterotoxin negative, Stone positive; 2 strains enterotoxin positive, Stone positive; and the 3 recently isolated strains were enterotoxin positive, Stone negative. This would seem to confirm the observations of other investigators that gelatin liquefaction on the Stone medium is not a reliable index of the ability of the strains to produce enterotoxin.

Other attempts were made to differentiate the enterotoxic from the non-enterotoxic strains with results which appeared to be of some significance. The enterotoxic strains were found to produce as much, and in the case of the Stone positive strains, more, hemolysin for rabbit erythrocytes than did any of the non-enterotoxic strains. All of the enterotoxic strains produced a small amount of hemolysin for human erythrocytes, while none of the non-enterotoxic strains produced any appreciable amount of this hemolysin.

A study of the behavior of these strains of staphylococci in the presence of normal horse serum was prompted by the observations of Beumer,[12] who showed that while the addition of normal horse serum to broth prevented the production of hemolysin by most pathogenic staphylococci, certain strains were capable of producing hemolysin in its presence. He presented evidence that the ability of these strains to produce hemolysin in the presence of horse serum was caused by the destruction of the normal antilysins by the proteolytic breakdown of the serum proteins by these strains. Since the evidence presented by Stone[13] and other investigators indicates that enterotoxic staphylococci are more active in their ability to liquefy gelatin than non-enterotoxic types, it appeared possible that they might also be more actively proteolytic on horse serum. However, when the strains in this collection were grown on coagulated horse serum, and on coagulated horse serum containing 3 per cent Difco beef extract, their proteolytic activity exactly paralleled their activity on Bacto Stone's extract gelatin agar. When grown in broth containing 20 per cent horse serum the enterotoxic Stone positive strains were found to be capable of producing hemolysin for rabbit erythrocytes. None of the non-enterotoxic strains, including the one strain which gave a positive Stone reaction and was proteolytic on coagulated horse serum, was capable of producing this hemolysin in broth containing horse serum. However, the recently isolated enterotoxic Stone negative strains would produce hemolysin only when grown in a partial atmosphere of carbon dioxide, but when grown under such conditions, produced much greater quantities of hemolysin for rabbit erythrocytes in the presence of horse serum than in its absence. Since other strains in the collection produced hemolysin in the presence of horse serum when grown in a partial atmosphere of carbon dioxide, the value of this method appeared limited for all practical purposes.

Finally, these strains were studied in their relation to the normal agglutinins in horse serum. These studies revealed a marked difference between the enterotoxic and non-enterotoxic strains in this collection in their agglutinability by normal horse serum. When living suspensions of the staphylococci were

mixed with varying dilutions of normal horse serum and incubated at 37°C. for 24 hours, selected non-enterotoxic strains were completely agglutinated in serum dilutions of 1:160 or 1:320, with the formation of large aggregates or clumps. Under the same conditions the enterotoxic strains were only partially agglutinated in serum dilutions of 1:80 and 1:160, and this agglutination was of the finely granular type. In the lower serum dilutions the enterotoxic strains showed marked growth with production of a heavy, diffuse turbidity. This suggested that the serum agglutinins had been destroyed during growth of the enterotoxic strains but since one of these strains had previously been demonstrated to be devoid of proteolytic activity on coagulated horse serum, and since the non-enterotoxic strains were completely agglutinated in comparatively high serum dilutions, it would appear that the difference in agglutinability was caused by some other inherent characteristics of the strains. In order to minimize the factor of growth, other tests were conducted in which incubation was carried out at 37°C. for 3 hours, followed by storage at 7°C. over night. Under these conditions, the enterotoxic strains failed to agglutinate while the non-enterotoxic strains were completely agglutinated in 1:10 serum dilutions, and almost completely in a dilution of 1:20.

With a full realization of the limitations imposed upon any interpretation of the above results, since only one horse serum and a few staphylococcus strains were studied, the results strongly suggest the probability that a fundamental difference exists between enterotoxic and non-enterotoxic strains of staphylococci in their agglutinability by normal horse serum. Further investigations have been started with other horse sera and known enterotoxic and non-enterotoxic strains of staphylococci, in order to determine whether this agglutination phenomenon is sufficiently characteristic to be of differential value.

SUMMARY

1. The occurrence of 20 outbreaks of food poisoning apparently due to staphylococci, all of which followed the consumption of "ready to eat" hams or tongue, is discussed. The public health problem presented by the incidence of staphylococcus food poisoning, involving "ready to eat" ham and related salt-cured meat products, appears to be as great as that presented by custard-filled bakery products.

2. A study of 37 strains of staphylococci isolated from food involved in 11 outbreaks of food poisoning demonstrated that the great majority of the strains had lost their ability to produce enterotoxin and to produce a positive Stone reaction during storage on laboratory media.

3. A fundamental difference between the enterotoxic and non-enterotoxic strains studied, seems to be indicated by the fact that they differ markedly in agglutinability by normal horse serum.

ACKNOWLEDGMENTS — Acknowledgment is made to the Food and Drug Administration of the U. S. Department of Agriculture for permission to present the data given in this paper and to Dr. A. C. Hunter, under whose direction this work was carried out.

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Cost of the World War*

IN money the World War cost $337,846,000,000, of which $189,000,000,000 was spent directly, the remainder consumed in destruction of property and stoppage of industry.

It cost the United States $32,000,000,000, plus continuing costs of $19,000,000,000, making a total of $51,000,000,000.

$51,000,000,000 would pay the cost of running the public elementary, high schools and colleges and universities for 17 years; would build two million miles of paved roads, which is three times the total mileage of surfaced roads now in use; would construct 15 million six-room houses; put 16 hospitals costing one million dollars each in every one of the 3,073 counties of the United States; and pay the unemployment-insurance premiums of everybody in the United States for more than 100 years at the New York State rate.

$51,000,000,000 would do all of the following: wire all the 9,400,000 homes in the United States which do not have electricity; pay all the farm mortgages; install bathrooms with running water in the 80% of farm homes which do not have them now; double the present endowments of all institutions of higher learning in the United States; build four consolidated high schools at a quarter of a million dollars each in every county of the United States; put a million-dollar airport in every county; build 10 bridges like the Tri-Borough Bridge; build another canal across the Isthmus; establish a five-billion-dollar program for the prevention of floods and soil erosion; set up an endowment fund which would provide $100 a month for every blind person and deaf mute in the United States; finance the entire recovery and relief program from 1932; and endow an organization which would carry on the work of the League of Nations, the World Court and the International Labor Organization.

Combined national debts of all countries were increased from $43,000,000,000 to $400,000,000,000. The cost of living was doubled. More than $4,000,000,000 of the expenditures annually in this country are the direct or indirect results of the World War.—Arthur W. Hawkins, Vice-President, Lincoln Bank and Trust Company, Syracuse, N. Y. *Westinghouse Magazine*, 11, 10 (Oct.), 1939.

* Figures from the International Chamber of Commerce.

Premarital and Prenatal Tests for Syphilis in New Jersey*

JOHN HALL, F.A.P.H.A.

Division of Venereal Disease Control, State Department of Health, Trenton, N. J.

THERE are interesting human sides of the story about blood tests for syphilis before marriage and during pregnancy, but I must stick close to this rather prosaic outline of our experiences in New Jersey:

Why these laws happened to be passed.
What they are.
How they work.
What the figures show.
What we are doing with their results.
How they are considered by our people.

Agitation in favor of a *Premarital* Medical Examination law, aimed particularly at the prevention of syphilis, was started in New Jersey in 1936 by what is known as the New Jersey Health and Sanitary Association. The idea was taken up and carried on aggressively by numerous other organizations, including the press, and was eventually sponsored in the Legislature by the State Department of Health. A letter of approval from Dr. Parran, reproduced and circulated widely, was a very effective part of our ammunition. Various forces had just begun to work stirring up a far greater interest than ever before in the venereal diseases and promoting a desire to do something about them. The general principle of this "*Marriage Bill*" could be readily understood, and it was one objective toward which anybody could take definite steps easily and soon. Our legislators were impressed with the popular demand for action and, although there was an undercurrent of disapproval from some church groups, it was not difficult to secure the passage of the bill in the spring of 1938.

The "*Prenatal Bill*" was introduced in the same session of the Legislature, got the benefit of the publicity being given to a similar new idea in New York State, took on some of the momentum then moving more or less everything with a venereal disease flavor, and was passed without the slightest opposition.

The program of education, which has been one of the activities of the State Health Department's Bureau of Venereal Disease Control for twenty years, was a good background and, no doubt, played a real part in the general approval of these two new laws.

WHAT THE PREMARITAL LAW IS

We followed the lead of Connecticut with our *Premarital* Bill and got much valuable assistance and advice from their State Health Department, which had had practical experience during two years. Our law as passed was substantially as the bill had been drawn and, boiled down, is this:

It deals with syphilis only. Not more than 30 days before getting a marriage license, each person must secure a certifi-

* Read before the Child Hygiene Section of the American Public Health Association at the Sixty-eighth Annual Meeting in Pittsburgh, Pa., October 17, 1939.

cate form divided in two parts. On one part an approved laboratory states that a blood sample from the person has been tested, but the *result* of the test is not given. On the other part of the form a "qualified physician" from any state, says that, after examining the person and considering the result of the blood test, it is his opinion *"that the person is not infected with syphilis or, if so infected, is not in a stage of that disease which may become communicable."*

HOW THE PREMARITAL LAW WORKS

Several features of this law are probably responsible for the relatively little difficulty it has caused. It attempts to do only one rather definite and fairly simple thing, and it puts the responsibility for the decision on the physician. A provision of our law, which we have not seen elsewhere, is a real help in its administration. These certificates, mentioned above, must go along with the marriage records until they reach the Bureau of Vital Statistics of the State Department of Health to be permanently filed. This makes it possible for us to know how well the law is being observed and to check up on any source of irregularity. This is not very easy to do, if the health certificates are allowed to stay in the hands of the local officials who issue the licenses, as appears to be the practice in other states. In this connection let me say that, after the first few months, these certificates have come back with remarkable completeness so that not more than one or two are now irregular or missing from the several thousand marriage records filed each month.

DECREASE IN MARRIAGES

The influence of our law on the *number of marriages* has apparently been the same as in Connecticut and elsewhere. There was a sharp reduction after July 1, 1938, when our law went into effect. Comparing marriages since that date with the previous year *alone* is not fair, because, in 1937, there were 3,400 *more* marriages in New Jersey than in any other year on record. Using for comparison the averages of corresponding periods of 1935–6–7, there was a 20 per cent reduction in marriages during the first 6 months of the law, but only a 7 per cent reduction in the second 6 months.

Pennsylvania has a law very similar to ours which will go into effect in May, 1940, and which will stop what little leakage of New Jersey marriages there may still be over our western border. New York's law started at the same time as ours did and effectively prevented people who wanted to avoid such requirements from going there.

APPROVED LARORATORIES

We have 85 laboratories, public and private, all in New Jersey, that are approved by the State Department of Health for making the premarital and prenatal blood tests. Incidentally, we have a system of checking our laboratories' tests by the use of standardized dried blood sera, but that is not a part of this discussion. An arrangement is in effect with the New York City Health Department whereby we accept their tests and they accept those made by our department. We expect similar reciprocity plans will eventually be made with the New York and Pennsylvania State Health Departments.

PREMARITAL BLOOD TESTS

Nearly all of the approved laboratories in New Jersey have made quarterly reports on the numbers of their premarital blood tests. We learn in this way that 62,764 such tests were made in the first full year of our law (July, 1938, through June, 1939). During this time, 56,664 persons were married in the state. Of these tests, 847 were positive. This is 1.35 per cent.

When you consider that repeat tests are often made on the positives, but almost never on the negatives, the actual number of *persons* with this evidence of syphilis is less than 847, as stated above. We have checked the names of those with 583 positive tests back and forth among four laboratories and found that only 62 (10.6 per cent) were duplicates. We feel that this small percentage of repeats is an indication that physicians do not have positive tests checked as regularly as they should, and we have broadcast a message to that effect. A printed set of suggestions about interpreting premarital blood tests,* which was sent by mail to all registered physicians in the state before the law went into effect, reads as follows on this point: "A *strongly positive* serologic test presumes the presence of syphilis, but it is wiser to repeat test before informing the applicant, unless a definite history of infection is obtained. . . . *Doubtful* reactions call for further physical examination and a repetition of test." Incidentally, this matter of duplicate positives is worth remembering in collecting statistics on the prevalence of syphilis in *any* groups that may be tested.

That positive tests should amount to only 1 per cent may seem a very small mouse to come out of all this mountain of legislation, expense, and fuss. But when you consider that it means at least 760 different persons in New Jersey, that a large proportion of them evidently had no previous knowledge of their infection, and that—as you will hear in a minute—many people in the earlier stages of syphilis are thus being persuaded to postpone marriage and start regular treatment, you will probably agree with us that our law is producing something of real value.

The U. S. Public Health Service has published an article[1] in *Venereal Disease Information* which aims to prove that 1 per cent of apparently healthy young people planning to get married, or any other similar group, is entirely consistent with Dr. Parran's original statement —often misquoted and frequently misunderstood—*"syphilis strikes one out of every ten adults."*[2]

WHAT THE FIGURES SHOW

Several facts regarding our premarital blood tests will have to be stated very briefly.

The 62,764 tests were made as follows:

	Per cent
At the State Health Department Laboratory	48
Also without charge at 15 other public laboratories	47
At 69 private and hospital laboratories	5

From 521 persons with positive tests made at 4 laboratories the following facts were derived: 52 per cent were men, 48 per cent women, 53 per cent white, and 47 per cent Negroes.

WHITES AND NEGROES

We have gone into this matter of whites and colored in a great deal of detail with 48,000 tests at four laboratories. It appears that about 0.6 per cent of the white persons tested are positive as compared with 11.0 per cent of the Negroes. This is a relationship of about 1 to 18. If this is true of our people as a whole (I have no proof that it is), it would indicate that the Negro 5 per cent of our population has half the syphilis. It is obvious from these and many other figures that, in quoting the numbers or percentages or almost anything about syphilis, we must be careful to consider this racial difference, and perhaps to give it much more attention than we are doing in our syphilis control programs.

* Samples of forms may be obtained from the State Department of Health, Trenton, N. J.

WHAT IS BEING DONE ABOUT IT

In New Jersey we have no system whereby the names of positive reactors to tests for syphilis are reported from all other laboratories to the State Department of Health. However, the success of an experiment in checking up on persons who have positive premarital tests in our department has made available to us the records of three other large laboratories. Now 85 per cent of the tests in the state for premarital purposes are a part of a routine which brings us a great deal of information.

A carefully worded questionnaire about each person whose premarital blood test is positive is mailed to the physician who sent in the sample after about 3 months. We ask for confidential data in 7 questions which cover the following points:

Did you give the certificate authorizing the issuance of a marriage license?

If not, did or did not the person get married?

Is, or is not, the person getting treatment?

Provision is made in the last two pairs of questions for the answer, "I don't know."

All the doctor needs to do is to check a square to answer a question. A space is also provided where a check mark serves to report a potentially infectious person as delinquent from treatment and, therefore, no longer protected against investigation by the ethics of confidence.

For the sake of simplicity, I report here only on the 282 persons with positive tests made in the State Laboratory during the full year. Results from nearly as many other persons tested at the three other laboratories are proving to be substantially the same.

It is interesting to note that 95 per cent of these 282 questionnaires were filled out and returned by the physicians. They contain a great deal of information both individually and collectively. Many physicians go to considerable effort in explaining their answers to the ques-

REPORTS FROM PHYSICIANS ON 282 POSITIVE PREMARITAL CASES

(From New Jersey State Health Department Laboratory—1 year)

	No.	*Per cent*
Marriage certificates granted	120	43
Marriage certificates refused	147	52
No report	15	5
Total	282	100
Of those 147 refused certificates:		
Did not get married	90	61
Married out of state	29	20
Result not known	28	19
Total	147	100
Three months after the tests:		
Under treatment	153	57
Not under treatment	35	13
Disappeared	69	26
Not stated	10	4
Total	267	100
Reported by physicians as delinquent, to be followed up	48	

At least half of the delinquents are being located by local boards of health and persuaded to continue treatment.

tions, and there has not been a single complaint of impropriety in our asking for these facts.

I can give you here only the briefest kind of a summary of the results of these efforts to find out what our marriage law really does.

HOW THE LAW IS CONSIDERED

Many physicians accept our invitation to comment on the premarital law in a space on the questionnaires. We have pages full of these quotations, only two of which I shall give. These are typical, and are repeated in different words again and again.

"The law in general is an excellent public health measure and seems to be well taken by the public."

"Prompt in treatments and coöperative. The law has great value; this patient was found only because of the law."

Six months after the law went into effect we sent a circular letter to a number of local registrars of vital statistics—the persons who issue marriage licenses—asking for an account of their experiences and requesting suggestions for simplifying the procedure or making the requirements of the law better known. There was a remarkable uniformity of approval in the 26 replies which were received.

We feel that there has been real value in the widespread publicity given to the law, both before and after it was passed, in which we had the whole-hearted support of the press, and which included the distribution of many thousands of copies of a simple leaflet of questions and answers issued by the State Department of Health. This is no doubt another reason for the general acceptance of the law and the smoothness with which it runs.

Here is one more quotation, somewhat exceptional it is true, but which we believe is an indication that our intensive program of education is making some impression on the people of our state. A physician wrote on a premarital questionnaire: "I find that this woman has been married for 4 years. While drunk she walked into my office, said she was going to get married, and asked for a blood test."

THE NEW JERSEY PRENATAL LAW

The story of our *Prenatal Law* is much less complete and definite. For one thing, it has been in effect only since January 1 of this present year; for another, it is of such a nature that its provisions are harder to enforce and its results far more difficult to see.

Briefly, this law provides that physicians shall take blood specimens for tests for syphilis from all pregnant women at the time of the first examination. Midwives, and others not authorized to take such samples, shall call in a qualified physician for the purpose. Birth and stillbirth certificates must include a statement of whether or not the mother's blood was tested, *but not the result*. If the test was made, the approximate date shall be given.

It is obvious that this is largely an educational measure, as there are no penalties for its avoidance and no specification that treatment shall follow positive blood tests. As with the marriage law, a great deal of publicity was given to this by the press and through various other channels available to the state and local departments of health.

From what we can learn, this law is well thought of, and we have already been able to collect a lot of figures.

PRENATAL BLOOD TESTS

Laboratories often do not know which blood speciments are from prenatal cases because there is no requirement that they be so identified. In many instances, however, the forms that accompany the blood samples are marked, and from 58 laboratories we learn that during the first 6 months of the law 19,752 prenatal tests have been made. Of these,

272 were positive. This is 1.38 per cent, almost the same as the percentage of positive premarital tests. So far we have been able to break down only a few of the figures, but from our state laboratory it appears that about 0.4 per cent of the white women tested are positive and about 6.0 per cent of the Negroes.

We have been agreeably surprised at the way in which the information about the tests has been given on birth certificates, in spite of the fact that it has taken a long time to get the new forms, with spaces provided for the purpose, out into circulation. During the month of March, 56 per cent of the birth certificates that came in had the notation about prenatal tests. In May there were 69 per cent; in August 84 per cent; in September 87 per cent.

The essence of the matter is, of course, to get the tests made *early* so treatment, if needed, can be most effective. We have secured some information from birth certificates for the month of May on this point, representing 3,232 women who were tested. This is condensed as follows:

Tests Made	*Per cent*
Prior to 5th month of pregnancy	20
In 5th month	17
In 6th month	14
In 7th month	13
In 8th month	8
In 9th month	20
Month not stated	8
	100

PRENATAL QUESTIONNAIRES

The *premarital* questionnaire scheme proved to be so successful that we are trying it on the *prenatal* cases with positive blood tests. These sheets make it easy for the physicians to answer the following questions: At what itme in pregnancy was this test made? Was the presence of syphilis formerly known to the woman? Has treatment previously been given? Has treatment been given in this pregnancy? If the baby has been born, what is its condition? Does it have any evidence of syphilis? What do you think of this law?

While these facts are not yet available about large numbers of cases, it is interesting to note what we have learned in 6 months.

One hundred and twenty-seven questionnaires went out; 114 have been returned—90 per cent; 12 were eliminated as not syphilis or not pregnant.

Tests were made at all times in pregnancy, almost equally distributed through the 8 months. Only 15 per cent of the women admitted knowing they had syphilis, and 14 per cent said they had *previous* treatment. Treatment was followed *since* the tests by 70 per cent.

Sixty-two pregnancies were definitely reported as terminated.

Forty-nine apparently healthy babies had been born.

Three obviously had syphilis.

Seven were stillbirths or miscarriages.

Three babies died soon after birth.

It appeared that very few blood tests on babies had been made.

You will readily realize that painstaking efforts on our part must be carried out over a much longer period to collect such facts in sufficient volume to be really valuable, and it is our intention to see that this is done. In fact, it is our obligation, after advocating the passage of both of these laws, to learn as much about their results as we can.

No matter if a law or a regulation, or anything else, appears to be perfect and its administration has been made as nearly foolproof as humanly possible, there are bound to be special cases and other reasons why its actual operation is not 100 per cent. I illustrate by one more quotation, again from a physician who wrote this on one of our premarital questionnaires: "This woman has twins by the person she was about to marry. Under the circumstances I thought best to grant the certificate but,

for reasons unknown to me, the marriage did not take place." Here we have a woman with twins, a blood test, syphilis, a health certificate, and a man —and still she didn't get married.

SUMMARY

Widespread public interest in the subjects of premarital and prenatal tests for syphilis, carefully prepared legislation, and a great deal of publicity are evidently the reasons the machinery of the new laws runs smoothly.

Large numbers of blood tests for syphilis are being made on young adults who would not otherwise have them. New cases are being found at the rate of about 1 per cent of those tested, which means at least 1,000 persons in the state in the course of a year. Many of these people, it appears, have no previous knowledge of their infection.

Most of the tests are made in public laboratories. Premarital positive tests are equally divided between men and women.

Negroes with syphilis outnumber whites by a wide margin on a percentage basis (at least 15 to 1).

Physicians are ready and willing to tell the State Department of Health, by means of simple questionnaires, what happens to the persons who have positive premarital and prenatal blood tests.

Premarital Tests

Nearly half (43 per cent) of the persons with positive tests are being given the certificates and are getting married.

More than half (57 per cent) of all those with positive tests are under treatment for at least 3 months.

Good coöperation is secured from physicians and health officials in following up delinquents from treatment.

Prenatal Tests

The law requires that statements be put on birth certificates as to whether or not blood tests were made on the mothers during pregnancy. This is being done at an increasing rate—87 per cent after the law had been in effect for 9 months.

The time in pregnancy when tests are made is stated on the birth certificates. Only 20 per cent of the tests appear to be prior to the 5th month.

Only 14 per cent of 102 positive cases had had previous treatment, but 70 per cent had treatments after the prenatal blood tests. Studies are being made of the condition of babies born, the presence or absence of syphilis, and the relation of time of prenatal tests and amount of treatment.

Physicians, registrars of vital statistics, and health officials questioned report almost unanimously that both these laws are well received by the public, have valuable educational features, and in their opinions are sound procedures in public health.

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Public Health Degrees and Certificates Granted in 1938 and 1939

THE Committee on Professional Education of the American Public Health Association presents a report of public health degrees and certificates granted in the calendar years 1938 and 1939. These tables are comparable to reports published for preceding years [1] with the exception that, beginning with this report, the basis of the record has become the number of students receiving degrees, rather than the number of degrees granted in the specified period.

Enrollment in Public Health Courses

Number of students enrolled, and Public Health Degrees and Certificates conferred in the years 1938 and 1939 by United States and Canadian Universities. Unless otherwise indicated courses require at least 1 year of residence.

TABLE I

Name of University	Number of Students Registered 1937–1938	Number of Students Registered 1938–1939	Degrees and Certificates Offered	Number of Graduates Receiving Degrees 1937–1938	Number of Graduates Receiving Degrees 1938–1939
DeLamar Institute of Public Health, Columbia University	22	26	M.S.P.H.	19	14
Harvard School of Public Health	36	54	Dr.P.H.	2	2
			M.P.H.	21	37
			C.P.H.	7	3
Johns Hopkins University School of Hygiene and Public Health	162	166	Dr.P.H.	11	3
			M.P.H.	0	71
			Sc.D.	8	11
			Sc.M.	3	4
			C.P.H.	64	0
Massachusetts Institute of Technology	64	58	S.B.	2	3
			S.M.	0	1
			Sc.D.	0	0
			Ph.D.	0	0
			Dr.P.H.	0	0
			C.P.H.	0	4
McGill University Faculty of Medicine	0	2	D.P.H.[2]	0	2
University of California [3]	28	49	C.P.H.	15	22
			A.B.	8	13
			M.A.	0	1
University of Michigan School of Hygiene and Public Health	191	252	M.S.P.H.	35	67
			Dr.P.H.	3	2
University of Minnesota	7	10	C.P.H.	2	2
			M.S.	0	3
University of North Carolina [4]					
University of Toronto School of Hygiene	18	17	D.P.H.[2]	18	16
University of Western Ontario	0	0	D.P.H.[2]	0	0

[1] *A.J.P.H.*, Vol. 28, p. 863; Vol. 27, p. 1267; Vol. 26, p. 819; Vol. 25, p. 341; Vol. 23, p. 1124.

TABLE I (Cont.)

Name of University	Number of Students Registered 1937–1938	Number of Students Registered 1938–1939	Degrees and Certificates Offered	Number of Graduates Receiving Degrees 1937–1938	Number of Graduates Receiving Degrees 1938–1939
Vanderbilt University School of Medicine [3]					
Wayne University College of Medicine	2	2	Dr.P.H.	1	0
Yale University Department of Public Health	29	37	M.P.H.	8	5
			Dr.P.H.	5	2
			Ph.D.	1	1
Total	559	673		233	289

[2] Diploma in Public Health.

[3] In addition to the regular courses, short courses of 1 semester plus 4 weeks' field training period or 12 weeks have been offered through 1938–1939. Seventy-four students registered in 1937–1938 and 38 in 1938–1939. "Certificates of Attendance" were given to 46 students in 1938 and 17 in 1939.

[4] Short courses only have been offered through 1938–1939. "Academic Awards" for satisfactory completion of courses were given to 35 health officers in 1937–1938 and to 25 in 1938–1939.

[5] Short courses of post graduate instruction, two each year, each 3 months in length. No degrees or certificates awarded.

Classification of Public Health Degrees and Certificates Granted in 1938 and 1939

Number of persons receiving Degrees and Certificates by reason of public health courses completed:

TABLE II

Degree	No. of Persons Receiving Degrees and Certificates 1938	No. of Persons Receiving Degrees and Certificates 1939	No. of Schools Offering Each Degree and Certificate
Doctor of Public Health	22	9	6
Doctor of Science	8	11	2
Doctor of Philosophy	1	1	2
Certificate in Public Health	88	31	5
Master of Public Health	29	113	3
Master of Science in Public Health	54	81	2
Master of Science	3	8	3
Master of Arts (Public Health Major)	0	1	1
Diploma in Public Health	18	18	3
Bachelor of Science in Public Health	2	3	1
Bachelor of Arts (Public Health Major)	8	13	1
Total	233	289	

College Enrollment in Courses Fundamentally Engineering in Character But Providing Training in Public Health Work

TABLE III

Name of University	College Enrollment 1937–1938	College Enrollment 1938–1939	Degrees Offered	Number of Persons Receiving Degrees 1937–1938	Number of Persons Receiving Degrees 1938–1939
Agricultural & Mechanical College of Texas	8	12	B.S. in C.E.	8	8
			M.S. in C.E.	0	1
Cornell University	2	2	C.E.	2	2
			B.S. in C.E.	0	0
			M.S. in Eng.	0	0
Harvard University (Graduate School of Engineering)	41	52	S.M. in Eng. (San.)	24	32
			S.D.	1	2
			S.M. (San. Chem.)	0	1

(Table III Cont. on page 1340)

TABLE III (Cont.)

Name of University	College Enrollment 1937–1938	College Enrollment 1938–1939	Degrees Offered	Number of Persons Receiving Degrees 1937–1938	Number of Persons Receiving Degrees 1938–1939
Iowa State College	127	164	M.S. in San. Eng.	1	0
			B.S.	22	36
Johns Hopkins University	1	4	Bachelor of Eng.	0	0
			Master of Eng.	0	0
			Doctor of Eng.	0	0
Lehigh University	2	2	B.S. in San. Eng.	0	1
Massachusetts Institute of Technology	8	11	S.B. in P.H.Eng.	1	2
			S.M. in P.H.Eng.	0	1
			Ph.D. in P.H.Eng.	0	0
			Sc.D. in P.H.Eng.	0	0
			Dr.P.H. in P.H.Eng.	0	0
			S.B. in San. Eng.	2	0
			S.M. in San. Eng.	1	1
			Sc.D. in San. Eng.	0	0
New York University	52	63	B.C.E. (San. option)	7	9
			M.C.E. (San. option)	4	9
Pennsylvania State College	15 Undergrad. 1 Grad.	18 Undergrad. 1 Grad.	B.S. in San. Eng.	1	6
			M.S. in San. Eng.	0	1
			Ph.D.	0	0
Rutgers University	14	20	B.Sc. in San. Science	3	1
			B.Sc. in San. Eng.	2	1
			M.Sc.	0	1
			Ph.D.	1	3
Stanford University (Graduate School)	5	4	Eng. in Civil Eng.	1	1
State University of Iowa	26	27	B.S. in C.E.	8	4
			B.S. in Ch.E.	1	3
			M.S. in Ch.E.	0	1
			M.S. in Chemistry	5	4
			Ph.D. (Fundamentally Chem.)	5	4
University of California	40	40	B.S. in C.E.	13	9
University of Illinois	10	12	B.S. in C.E.	6	5
			M.S. in C.E.	1	0
			Ph.D.	0	0
University of Kansas	3	4	B.S. in C.E. (Sanitary)	2	4
			M.S. in C.E. (Sanitary)	1	0
University of Minnesota	8	11	C.P.H.	0	0
			M.S.	3	1
University of Toronto (post-graduate only)	0[1]	2	M.A.Sc.	0[1]	2
West Virginia University	33	36	B.S.C.E. (San. option)	2	4
			B.S.C.E. (Structural option)	4	3
Total	396	485		132	163

[1] No courses given prior to academic year 1938–1939.

Public Health Nursing Degrees and Certificates Granted 1937–1938

There were approximately 3,700 nurses studying public health nursing in the programs of study which met certain requirements in regard to theoretical and practical instruction according to the standards of the National Organization for Public Health Nursing. About 2,700 were enrolled during the academic year and 1,000 in summer sessions. Two universities reported enrollments of more than 500 each during the academic year—Wayne and Columbia Universities. Five colleges and universities each reported more than 100 enrolled at summer sessions—the Universities of Michigan, Minnesota, Columbia, Syracuse, and George Peabody.

Of the 2,700 students attending during the academic year, almost half, 46.6 per cent had registered for the first time at the institutions reporting them as 1937–1938 students.

Social security stipends assisted 22.1 per cent of the public health nurses enrolled during the academic year. Of those who received certificates, 23.9 per cent had used social security stipends during the year.

The following table indicates the number of students who received degrees and certificates in Public Health Nursing for this period. These figures have been supplied by the National Organization for Public Health Nursing and are printed here with permission. Note: No report received from Simmons College.

TABLE IV

Program of Study	*Certificates*	*B.S. or B.A. Degree*	*M.S. or M.A. Degree*
University of California Division of Nursing Education	60	59	0
Catholic University of America School of Nursing Education	14	10	0
University of Michigan Division of Hygiene and Public Health	27	8	3
Wayne University Department of Nursing	55	4	0
University of Minnesota Department of Preventive Medicine and Public Health	6	40	0
Teachers College, Columbia University Division of Nursing Education	0	35	8
Fordham University School of Social Service	3	0	0
University of Syracuse Department of Public Health Nursing	12	3	0
Ohio State University School of Nursing	0	20	0
Western Reserve University School of Applied Social Sciences	44	0	4
University of Oregon Medical School Department of Nursing Education	26	21	0
University of Pennsylvania Department of Nursing Education	20	5	0
George Peabody College for Teachers Department of Nursing Education	48	12	1
Vanderbilt University School of Nursing	14	3	0
Medical College of Virginia St. Philip School of Nursing	15	0	0
College of William and Mary, Richmond Division School of Social Work and Public Health Nursing	31	1	0
University of Washington School of Nursing Education	42	17	1 [1]
University of Hawaii Department of Public Health Nursing	5	0	0
Total	422	238	17

[1] Degree of Master of Nursing

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The Educational Qualifications of Health Officers*

THE type of training most desirable for an individual seeking to become a health officer is well recognized. He should have had fundamental training in the sciences and the humanities at least equivalent to that required for a college degree in Arts or Science. He should have completed the course leading to the degree of Doctor of Medicine in a recognized medical school, and should have had at least one year of internship in an approved general hospital, including a communicable disease service. In addition to such internship the candidate should be given a preliminary period of supervised field experience in a well organized department of health for a period sufficient to give him acquaintance with the general aspects of public health, and to give him also opportunity to determine something of his own liking for the work and his fitness for it. At the end of this preliminary field experience the candidate should receive at least one full academic year of graduate instruction in public health in a university. If possible the candidate should have an additional year of practical experience in a subordinate position before becoming himself responsible for the conduct of the work of a department of health.

However desirable so complete a course may be, it is impracticable at this time to insist that all candidates for appointment comply with these requirements. In view of this practical situation, some modification may temporarily be made in the direction of recognizing the value of practical field experience obtained under competent supervision as in some measure substituting for formal education.

Certain individuals not possessing a medical degree have achieved success as administrative health officers. It is reasonable, therefore, that the basic training represented by the medical degree, although advisable, need not necessarily be considered absolutely essential in the selection of health officers for jurisdictions where the duties of the health officer are mainly administrative, provided the candidate possesses an adequate general and biological education, has received not less than 2 academic years of graduate instruction in public health, and has had one or more years of administrative experience in some position in a recognized health organization as prerequisite for the duties of health officer.

Because of the unmistakable trend upon the part of governmental bodies to insist upon the medical degree as a prerequisite to appointment as health officer, and because it is impossable to foresee whether the prospective health officer will be located in a health department where his duties are restricted to administrative functions, it is inadvisable to encourage the candidate for a public health degree to look forward to a career as health officer unless he is also the possessor of a medical degree, and for these reasons our recommenda-

* Approved by the Governing Council of the American Public Health Association, October 18, 1939, on recommendation of the Committee on Professional Education.

tions contain no reference to the non-medical health officer.

RECOMMENDATIONS

1. That candidates for appointment as health officer should be graduates of approved medical schools who have completed successfully not less than one year of internship in an approved hospital and in addition a course of not less than one year of graduate instruction in a university, leading to a degree in public health.*

2. That recognition be given to the fact that practical experience in public health administration is an essential part of the education of a health officer, and that great achievement can usually be attained only after long experience. These facts should always be taken into consideration in the selection of health officers, particularly where the position is one of great administrative responsibility.

The above recommendations are made for the future guidance of officials responsible for the appointment of health officers, and for the guidance of individuals looking forward to careers in public health. In making these recommendations the American Public Health Association expressly recognizes the professional standing of persons now performing creditable service as health officers.

* Where lack of qualified personnel makes it impossible to require a full year of graduate instruction in public health, the postgraduate requirements considered temporarily as applicable for medical health officers for small jurisdictions may be: the satisfactory completion of not less than 3 months of postgraduate instruction in public health in a university, and not less than 3 months of supervised field experience in a well organized health department. Such individuals should be required to complete the course leading to a graduate degree in public health as soon as they have demonstrated ability sufficient to warrant such instruction.

Advances in Thiamin Research*

AARON ARNOLD, PH.D., AND F. D. BAIRD
National Oil Products Company, Harrison, N. J.
and
C. A. ELVEHJEM, PH.D.
Department of Biochemistry, University of Wisconsin, Madison, Wis.

THE concerted effort of many research centers has been necessary to evaluate the rôle of thiamin in human and animal nutrition. The fundamental questions which necessarily attend the elucidation of each new nutritional factor continue to receive attention as older methods are made more exact and new ones are introduced. The problems of distribution, stability, quantitative requirements and physiological rôle are receiving serious consideration at the present time.

The chemical estimation of thiamin by the thiochrome procedure [1] which depends on the alkaline oxidation of thiamin with ferricyanide is being used in a number of laboratories. Cerecedo and Hennessy's finding [2] that zeolite absorbs the vitamin has provided a new approach to the thiochrome assay procedure [3] which may obviate earlier difficulties. Melnick and Field [4] have incorporated the use of zeolite into the colorimetric procedure of Prebluda and McCollum [5] which is based on the reaction of the vitamin with diazotized p-aminoacetophenone along with xylene extraction and report favorable results after an extensive series of experiments. Assays on a number of biological materials, after phosphatase treatment, yielded values in accord with previous biological assays. Willstädt and Barany[6] have obtained promising results with the use of diazotized 2, 6-dichloraniline.

The fermentation methods of Frey, *et al.*[7] offer possibilities where it is necessary to estimate small amounts of the vitamin. They have refined their method [8] by determining the thiamin values before and after ferricyanide treatment which destroys only the vitamin. Birch and Harris,[9] and Baker and Wright [10] have assayed a variety of biological materials for thiamin by the bradycardia procedure with rats. The *Phycomyces* procedure [11] may also prove of value under controlled conditions.[12] The organism does not require the intact molecule and its value is thus additionally limited. In this connection it is interesting to note that the Abderhaldens [13] have found that pigeons are also able to respond to the separate thiazole and pyrimidine components of the thiamin molecule when these are administered in large amounts.

The recognition of new factors in the vitamin B complex and the development of more exact methods for their estimation makes it evident that earlier assays

* Read before the Food and Nutrition Section of the American Public Health Association at the Sixty-eighth Annual Meeting in Pittsburgh, Pa., October 20, 1939.

for thiamin will be revised in many instances. Baker and Wright [10] have supplied extensive tables on a wide variety of food materials assayed with rats by the bradycardia procedure. The findings of Elvehjem, *et al.*,[14] Table 1,

TABLE 1

Recent Values on the Thiamin Content of Selected Foods

	Thiamin Content, Dry Basis	
Food	*μg. per gm.*	*I.U. per gm.*
Beef heart	30	10
Beef kidney	15	5
Beef liver	12	4
Lamb liver	12	4
Lamb, leg of	12	4
Pork ham	33–60	11–20
Smoked ham	33	11
Canned ham	26	8.6
Pork heart	25.5	8.5
Pork kidney	24	8
Pork liver	16	5.3
Pork loin	39–60	13–20
Milk		1.8
Potatoes, boiled and peeled		1.2
White bread (fresh basis)		0.14–0.2
Brown bread (fresh basis)		0.5–0.7
Whole wheat bread (fresh basis)		1.15–1.2
Wheat, whole grain (fresh basis)		1.2–3.4

show that meats may serve as one of the rich sources of thiamin in the diet. As indicated by these investigators, meats may supply up to one-third of the daily requirement for thiamin, even when supplied at a level of 7 per cent in the diet. That meats, particularly when not too well done, may serve as a good source of thiamin is in accord with the observations of Stefansson [15] who recently noted that northern people consuming large quantities of meat never suffer from lack of this factor.

Stiebeling and Phipard [16] have recently completed an extensive survey on the diets of families of employed wage earners and clerical workers in cities. An estimation of the thiamin intake based on the literature values for the foods consumed indicated that all groups received more than 240 I.U. of thiamin chloride per day estimated in terms of an average man. About half of the families examined received 500 or more I.U. of thiamin chloride per day. Baker, *et al.*[17] have concluded that the best fed members of the English population today, while getting twice as much thiamin as people in the low income group, consume less thiamin than the parish poor of the 18th and early 19th century.

The question of the stability of thiamin has interested investigators in the field for some time. The thiamin contained in cod roe has been reported to be comparatively stable to processing conditions, a loss of only 20 per cent having been observed.[18] Our own studies with dry animal tissues [19] demonstrated that the thiamin contained in these tissues was comparatively stable during a 2 year storage period. The losses of thiamin did not exceed 20 per cent in any of the four tissues assayed.

The evidence on the decrease in thiamin content during cooking is encouraging. Elvehjem, *et al.*,[14] Table 2, studied the effects on meats of frying, roasting, broiling, baking, and stewing. It was found that frying smoked ham, beef round, and pork ham for 15 to 20 minutes did not materially affect the thiamin content. Frying pork loin and veal hindquarter decreased the thiamin content by 35–45 per cent. Roasting, broiling, baking, and stewing decreased the thiamin content by approximately half in the meats studied. It will be noted that the time and temperature involved in these methods of food preparation is longer than that of frying.

The results just mentioned on the vitamin content of processed and cooked meats bear on the results reported by Stiebeling and Phipard.[16] These investigators were aware of this difficulty and estimate that their values are high. The correction factor required to convert

TABLE 2

Stability of Thiamin During Household Cooking Processes

Process	*Meat*	*Processing Time Min.*	*Destruction of Thiamin Per cent*
Frying	Beef round	20	none
	Veal hindquarter	20	45
	Pork ham	15	none
	Smoked ham	15	10
	Pork ham	medium well done	35
		Hours	
Roasting	Beef round	2.5	61
	Veal hindquarter	2	58
	Pork loin	1.5	50
Broiling	Beef round	20 min.	50
Baking	Pork loin	1 hr.	50
Stewing	Beef heart	1 hr.	55
	Beef kidney	45 min.	40

their values to the actual conditions cannot be estimated without further data. Baker and Wright [20] believe that beriberi may occur on diets supplying 400 or more I.U. of thiamin chloride daily. The protective level according to Baker and Wright may vary according to body weight and food consumption. Harris and Leong [21] have calculated from Baker and Wright's thiamin values of foodstuffs, as determined by the bradycardia method, that 250 I.U. per day represents the amount of thiamin found in the ordinary middle class dietary in England.

The daily intake of thiamin must therefore be related to the daily requirement in order to utilize the results on the thiamin content of food materials. Stiebeling and Phipard [16] have accepted the earlier values submitted by Cowgill and his coworkers [22] and estimate the daily requirement for a 70 kg. man consuming 3,000 calories per day to be 300 I.U. Our own studies with rats, chicks,[23] and dogs [24] have indicated that the thiamin requirements of various species may be expressed in a slightly different way. While different criteria may be used for the estimation of minimum vitamin requirements, we have found that normal growth resulted when the diet of these species was supplemented with 80 to 100 μg. (micrograms) of thiamin chloride per 100 gm. of low fat diet. The uniformity of results with rats, chicks, and dogs led us to conclude that the human requirement for the antineuritic factor was probably in the same range.

This conclusion is in accord with that of Williams and Spies,[25] independently reached as a result of their literature studies on diets borderline to deficient in thiamin as evidenced by actual field observations. On this basis, therefore, the thiamin requirement for a 70 kg. man consuming 3,000 calories or approximately 750 gm. of food should be 600–750 μg. or 200–250 I.U. of thiamin chloride per day. This level of the vitamin is certainly very close to the minimum and it would be well to supply 2 to 3 times this level. Referring once again to the survey of Stiebeling and Phipard [16] wherein these investigators found that the diets of half the employed workers supplied less than 400 I.U. of thiamin chloride per day without allowance for losses involved during cooking, one may consider that the dietaries of even self-sustaining

families under modern conditions are close to borderline in their content of this factor.

The physiological rôle of thiamin in the body has been studied by a number of workers. Kinnersley and Peters reported in 1929 [26] that thiamin was associated with carbohydrate and, more specifically, with lactic acid oxidation. Thompson and Johnson demonstrated in 1935 [27] that the blood of thiamin deficient pigeons contained abnormal amounts of pyruvic acid. This finding was confirmed and extended by Sherman and Elvehjem [28] who reported reduced pyruvate oxidation by cerebral and kidney tissue of polyneuritic chicks. Peters in 1936 was led to state that thiamin was either acting as a coenzyme to pyruvic oxidase or constituted the prosthetic group itself. This line of investigation was culminated by the fundamental finding of Lohmann and Schuster in 1937,[29] studying the chemistry of the coenzyme for the decarboxylation of pyruvic acid in yeast, that cocarboxylase was thiamin pyrophosphate. Peters, *et al.*[30] have recently reported evidence to show that thiamin pyrophosphate is the active principle which gives the catatorulin effect with avitaminous pigeon brain tissue. Goodhart and Sinclair [31] have reported that the cocarboxylase of the blood is contained entirely within the blood cells which indicates that the readily diffusible form of the vitamin exists either as free thiamin or thiamin phosphate. Elvehjem, *et al.*[32] have shown that free thiamin may be distinguished from cocarboxylase in boiled tissue extracts by the proper combination of iodoacetate and fluoride. Lipmann [33] has observed that certain bacteria containing little adenylpyrophosphatase shaken with adenylic acid and pyruvic acid removed inorganic phosphate. This indicated synthesis of adenosinepyrophosphate and, therefore, a linkage between the thiamin and adenylic acid systems which could supply a new source of energy for phosphorylation.

Evans and Lepkovsky demonstrated in 1928 [34] that rats fed high fat diets required less thiamin for normal growth than those fed low fat diets. This finding was subsequently confirmed by Salmon and Goodman,[35] and Elvehjem, *et al.*[24, 36] Richter, *et al.*[37] have added additional evidence on this point by their technic of free choice experiments. Nine rats on an adequate self-selection diet were rendered deficient in thiamin by the omission of yeast from the diet. At the height of the deficiency, the animals had a marked aversion for carbohydrate and protein, and a craving for fat.

More recently, we have observed in studies with dogs [24] that the thiamin requirement may be expressed in terms of the non-fat, energy supplying foodstuffs. Thus, dogs fed low fat diets required 75 μg. of thiamin chloride per 100 gm. of diet for normal growth. An increase of the fat content of the diet to 56.5 per cent decreased the thiamin requirement of the dogs to 27.5 μg. per 100 gm. of diet. When the thiamin chloride content of the high fat diet was expressed in terms of the non-fat energy supplying food materials, the requirement was similar to that found with the low fat diet, namely, 75 μg. per 100 gm. of non-fat dietary constituents. These results are in agreement with the conclusions of Williams and Spies [25] who stated that the thiamin sparing action of lard is not due to contained thiamin. This was recently confirmed by Melnick and Field.[38] The Michigan workers applied their colorimetric procedure [4] for thiamin to lard and concluded that it did not contain the vitamin. They were able to recover added thiamin under the same conditions.

These findings have immediate application in that they indicate that the daily requirement in the human dietary

is partly decreased in proportion to the amount of fat supplied by the foods consumed.

Engel and Phillips [39] have recently observed that polyneuritic rats cured with crystalline thiamin chloride have abnormal livers as judged by histological examination although no chemical differences could be demonstrated. Polyneuritic animals fed thiamin-low, high fat diets recovered without liver degenerative changes.

The findings of Harris, *et al.*[40] are important in that they demonstrate quite clearly that the saturation level of thiamin for the rat is readily reached at approximately 10 times (30 I.U.) the requirement level. Examination of the tissues indicated that they were unable to store the vitamin to any extent in contrast to the ability of the body to store the fat soluble vitamins. These investigators report that the urinary excretion of vitamin B_1 may be used as a useful guide for assessing the state of nutrition; a resting level of 10–20 I.U. per day and a response of at least 30 I.U. after the administration of a 350 I.U. test dose may be regarded as indicating normal nutrition.

Perla [41] has made the interesting observation that added amounts of thiamin to a stock colony diet for rats at a level of 30 to 50 I.U. daily resulted in interference with lactation, loss of maternal instinct, cannibalism, and progressive loss of fertility. Sure [42] has confirmed these observations. No reproduction disturbances resulted [41] when 2 mg. of Mn. (as $MnCl_2$) daily were added to the diet of the rats parenterally injected with 200 I.U. daily.

Thiamin therapy in human disorders is now being applied on an ever widening front. Recent contributions can only be referred to briefly here. The vitamin has been found effective in cases of hyperthyroidism and tachycardia,[43] edemas of nurslings,[44] intractable pain, and inflammatory and degenerative diseases of the central nervous system,[45, 46] chronic diarrheas and atonic constipation,[47] multiple deficiencies,[48] and "pernicious vomiting" of pregnancy.[49]

SUMMARY

We may state that the physiological rôle of thiamin in the body has definitely been shown to be associated with the metabolism of pyruvic acid and related keto acids, intermediates in glycolysis. On the basis of studies with laboratory animals, we have suggested that the daily requirement for all species is approximately 1 p.p.m. of low fat dietary solids. This requirement is decreased in the presence of increased amounts of fat in the diet. The requirement must be satisfied by almost constant intake since the body is unable to store appreciable amounts of the vitamin. Studies on the dietaries of middle class families in England and similar groups in this country have indicated the daily thiamin intake is close to the borderline requirement level. A distinction must be made between the requirement level and the optimum level. With the development of simpler and more rapid methods for the determination of the vitamin and new criteria for its function, it will be possible to determine whether the level for optimum nutrition is appreciably above the requirement level.

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DR. W. S. LEATHERS was made President-Elect of the American Public Health Association at the Pittsburgh meeting in October. At this time, Dr. Edward S. Godfrey, New York State Health Commissioner, became President, and Dr. Abel Wolman, Professor of Sanitary Engineering, Johns Hopkins University, retired as President and was elected Chairman of the Executive Board.

Dr. Leathers was born in Charlottesville, Va. He received his M.A. and M.D. degrees at the University of Virginia; was a student at Johns Hopkins University; did graduate work at Harvard and the University of Chicago; did special research work at the biological laboratories of Woods Hole, Mass., and Cold Spring, N. Y. In 1924 he was awarded the degree of Doctor of Laws by the University of Mississippi, and in 1937 a similar degree from Tulane University.

Waller S. Leathers, M.D., LL.D.

After serving as Professor of Biology at the University of South Carolina, 1897–1899, he was called to the chair of Zoölogy of the University of Mississippi, where he later was in charge of the Department of Physiology and Hygiene, and in 1904 was made Dean of the Medical Department of the University, which department he organized.

He became Director of Public Health of the State of Mississippi in 1910, and served for 7 years as Director, and 7 years as Secretary and Executive Officer of the State Board of Health. It was Dr. Leathers who brought the health work of the State of Mississippi from obscurity to the point where it

attracted not only national attention but the notice of many foreign countries.

In 1924 Dr. Leathers resigned from the Mississippi State Board of Health to accept the position of Professor of Preventive Medicine and Public Health in the School of Medicine of Vanderbilt University, Nashville, Tenn., and in 1928 was made Dean of the School of Medicine, in which capacity he still serves.

Among others, Dr. Leathers is a member of the following societies: American Medical Association, Society of Medical Officers of Health of England, Society of Tropical Medicine, Southern Medical Association, and the American Association for the Advancement of Science. He has been a member of the A.P.H.A. since 1910, is a Charter Fellow and a Life Member, was Chairman of the Committee on Professional Education 1932–1939, and served as a member of the Governing Council 1927–1930, and 1930–1933.

HENRY E. YOUNG, M.D.

WITH the passing of Dr. Young on October 24, 1939, in the 73rd year of his age, the American continent has lost one of its pioneer leaders in public health. We purposely speak of the American continent, for while Dr. Young was a Canadian and his work was done primarily in and for that Dominion, he was one of those rare characters who belong to the world at large and especially to that continent on which he lived and to the betterment of which his activities were largely devoted. While we have enjoyed the fellowship of many of Canada's leaders in public health as members of our Association, Dr. Young, in many ways, came a little closer to us than some others, possibly through his connection with the Western Branch of our Association in which he took a great interest and of which he was President-elect in 1936, when many of us were the recipients of his delightful hospitality at Vancouver and Victoria at a joint meeting of the Canadian Public Health Association and the Western Branch of the A.P.H.A. The occasion was made especially memorable by the presentation of a gavel to the Western Branch, made from the timbers of the S. S. "Beaver," a ship built in 1834 in England, and which for 53 years played a large part in the maritime development of the Northwest Pacific.[1]

Dr. Young for 12 years was a Conservative legislator and for 23 years a public servant under six Prime Ministers. During this time he instituted many reforms in the health service of the province. He had a remarkable capacity for organization, the beneficial results of which were always noticeable and especially so during the influenza epidemic in British Columbia in 1918.

One of his great objectives was always the establishment of a University in British Columbia, which was achieved during his lifetime and in which he maintained his active interest to the last. Dr. Young's position in British Columbia was unique in that his services covered three decades during which the governmental attitude toward health and education changed from that of passive direction to active assistance and control, and it is not too much to say that his influence was largely responsible for this change. He was recognized as the dean of public health officers in the Dominion of Canada.

He was always a leader. A brilliant scholastic record at Queen's University and McGill was followed by postgraduate studies at the University of Pennsyl-

vania and in England. Honorary degrees were given him by many universities, including Toronto, McGill, and the University of British Columbia.

Among the offices he held were the Chairmanship and later a Life Member of the Canadian Public Health Association, the Presidency of the State and Provincial Health Authorities of North America, Presidency of the Western Branch of the A.P.H.A. He became a member of the A.P.H.A. in 1916, a Charter Fellow in 1922, and an Honorary Fellow in 1932. He was a member of the National Committee for Mental Hygiene and the American Child Hygiene Association, member of the Honorary Advisory Committee of the Connaught Laboratories, Honorary Vice-President of the St. John Ambulance Association, a Fellow of the Royal Society on Tropical Diseases, a member of the Advisory Council of the Dominion Ministry of Health, an Honorary Fellow of the British Columbia Academy of Science, and member of the Board of Governors of the Canadian Welfare Association.

With his accomplishments as a scientific man and a health officer, he combined a delightful personality, most helpful to the younger men who had the good fortune to be associated with him or to serve under him. It is hardly too much to say that he leaves as many devoted friends and admirers on this side of the border as may be found in Canada, though the people of British Columbia, especially, had the rare privilege of constant association with him year in and year out. Among the great men of whom Canada is justly proud, no one has ranked higher than Dr. Young, and none has commanded greater personal affection and loyalty than he.

REFERENCE

1. *A.J.P.H.*, Sept., 1936, pp. 954-955.

THE NEWER VENEREAL DISEASES

WHILE Lymphogranuloma venereum (Lymphogranuloma inguinale) and Granuloma venereum (Granuloma inguinale) doubtless have been with us for many generations it is only comparatively recently that they have been identified as clinical entities. The recognition of these conditions as specific diseases has come about largely by virtue of improved methods for the recognition of syphilis and chancroid, ulcerative diseases long known as effecting the genitalia, and by reason of the development of the Frei test for Lymphopathia venereum and the recognition of Donovan bodies in Granuloma venereum. Without unduly emphasizing the specificity of either of those tests in the diagnosis of the respective diseases, and readily acknowledging the sources of error in either of them, it still must be recognized that often they gave valuable aid in classifying clinical conditions. Health officers concerned with populations which include large numbers of Negroes recognize the great importance of these two diseases as causes of prolonged disability and consequently of great economic loss to the community. It is by no means uncommon for either condition to require months, and even years, of hospitalization at public expense. Our present knowledge of these diseases is just about what our knowledge of syphilis was at the beginning of this century.

The success of efforts to control syphilis is the direct outgrowth of the work of Schaudinn and Hoffman, of Wassermann, and of Ehrlich. Until we have knowl-

edge of the newer venereal diseases comparable to that provided by the investigators mentioned in respect to syphilis we cannot expect much success in attempts to prevent and treat them. Now that our knowledge gained by research has put us in such an enviable position with respect to syphilis as to lead to prospects of speedy success of control measures, let us hope that investigators will devote more attention to these predominantly venereal conditions about which we know so little. Perhaps it would not be expecting too much to desire to see some of the resources in money and energy now going into problems related to syphilis turned into the channels of study of the newer venereal diseases. Such problems as sources of infection, modes of transmission, prophylaxis, and therapeutics all await further study.

A TRIBUTE TO DR. LIVINGSTON FARRAND WHO DIED NOVEMBER 8, 1939

THE Chemin des Dame in 1919 was a strange place in which to develop a friendship. That is where Dr. Farrand and I first had three uninterrupted days together, travelling along the entire Western Front and exploring its devastation. Prior to that our contacts had been in the busy line of duty and our conversations brief. Our voyage together was his first moment of relaxation during or since the World War. Freed momentarily from crushing responsibilities he reacted like a schoolboy and with tireless curiosity darted into dug-outs, examined the remnants of postes de secours, studied maps in an effort to locate vanished villages, slept and ate in the ruins of shattered estaminets, maintaining the while a running fire of keenest question and comment. Now and then on a bit of rising ground he paused in silence, his pitying eyes sweeping that terrain of utter desolation, his great heart suffering at the limitless human tragedy there displayed.

In the twenty years since, during which he has filled many rôles with high distinction, I have always seen him as I knew him then, a boy in spirit, a man in understanding, an alert scholar, a friend of his fellow men. The many sides of his personality were so nicely balanced and so blended with warm human sympathy as to kindle an answering spark of friendship in all his associates.

Life was not ungenerous to Dr. Farrand in its allotment of years. Yet his ceaseless energy and the youthful clarity of his thinking erased from our minds any thought that he was growing old. He had a rare capacity for playing the part of a contemporary with whomever he conferred. That quality endeared him to young and old alike and will abide as a lasting inspiration in the memory of his countless friends.

KENDALL EMERSON

BOOKS AND REPORTS

Man Against Microbe—*By Joseph W. Bigger, M.D. New York: Macmillan,* 1939. 304 pp. Price, $2.50.

The writer, who has already established for himself an enviable position as an author of textbooks, now writes for the general public on a subject in which everyone is of necessity interested and which he believes has too long been regarded as a matter only for specialists. He considers microbiology as an educational and cultural subject just as worthy of study as any of the other basic sciences, or even "politics and finance."

One might almost say that the book is dedicated to Antony van Leeuwenhoek, who first saw what we now call bacteria, as it begins with an "Introduction" to him and ends with a tribute to him as "one of the world's few really great men."

The book is orderly arranged in three sections, one giving the meaning of microbiology, the second the history of microbiology, and the third the relation of microbiology to mankind. It is written in simple language and good English which holds the attention of the reader. It is a fascinating story which can be recommended to all laymen whatever their calling.

We have found only one factual error. The author states that Reed, Carroll, Lazear, and Agramonte lived in a well screened hut, using the clothing and bedding, even soiled with the vomit and excreta of those who had died of yellow fever, yet escaped. While the experiment was done under the direction of the American Commission, the men who actually volunteered for this service were Dr. Robert P. Cooke, of Richmond, Va., Acting Assistant Surgeon, and Privates Levi E. Folk and Warren J. Jernigan. These men deserve all the credit for their heroism and the Commission which planned the experiment gave it to them.

The book is well illustrated with 18 plates and 17 cuts. The plates without exception are good and many of the cuts also. The binding and make-up are excellent.

It is a good book for all public libraries. MAZÝCK P. RAVENEL

Silicosis and Asbestosis—*By various authors. Edited by A. J. Lanza, M.D. New York: Oxford University Press,* 1938. 439 pp. Price, $4.25.

Silicosis and asbestosis, diseases quite frequently encountered among workers in certain dusty trades are today regarded as being of real public health significance. Upward of 500,000 workers in the United States are exposed to silica dust to a harmful degree. The present book, representing the joint efforts of 4 American and 2 British experts in this field, is most timely.

Here is summarized the knowledge of both silicosis and asbestosis. The pattern followed conveys the fundamental information in condensed and direct fashion under (1) history, (2) etiology, symptomatology and diagnosis, (3) X-ray diagnosis, (4) pathology, (5) experimental pathology, (6) occupational preventive and legislative aspects in Great Britain, and finally (7) public health and economic aspects in the United States.

In the section devoted to X-ray diagnosis a similar type of tabulation presents the X-ray and histological

appearances in the healthy lung, in simple silicosis, and in silicosis with infection. A discussion of Roentgen Technic includes consideration of time of exposure, focal-spot film distances, type of screens, desired voltage, choice of current, type of tube and the processing of films, measurement of patients, and stereoscopic examinations. This section is very complete and well illustrated.

The sections on pathology (by R. S. Gloyne), and experimental pathology (by L. U. Gardner), taken together present a complete picture of the nature of the damage done by silica dust in man and animals and also a dynamic view of the effect of other dusts on the lungs when mixed with silica dust. This latter portion provides an excellent basis for an appreciation of the effects of various mixed dusts, which constitute a most important medical and compensation problem.

That the incidence of silicosis varies from industry to industry is borne out by a table showing the number of deaths from this disease in Great Britain from 1930 to 1936, the average being 325 deaths per year. This does not represent the true number since many cases are not diagnosed, and while many men have the disease they die from other causes. The nature of the industry, the nature of the dust (its content of free silica), size distribution of dust, concentration, and other factors play determining rôles. Dr. Middleton discusses these points with respect to many different occupations and also prevention and compensation. The British schemes for compensation are well presented.

Dr. Lanza in the final chapter on public health and economic aspects presents the American compensation schemes for silicosis, and a brief discussion of the fundamentals of medical and engineering prevention of silicosis.

LEONARD GREENBURG

The Administration of High School Athletics—*By Charles E. Forsythe. New York: Prentice-Hall,* 1939. 413 pp. Price, $2.00.

There is great need of texts written by people with practical experience. This is peculiarly true in the field of education. One of the great weaknesses in education—possibly the greatest—is that so much of our program is instigated by theorists who lack intensive practical experience.

Therefore this text is especially welcome. Written by one who is actually administering interscholastic athletic competition at the high school level, it has a practical point of view.

It is devoted to that special phase of physical education which is called athletics and is applied largely to interscholastic athletic competition. Starting with the history and objectives of such competition, it speaks of the National Federation of State High School Athletic Associations, and of State High School Associations, then discusses regulations controlling eligibility and contests. It discusses policy and administration for local programs, for contest management, and goes on to speak of equipment, awards, finances, and budgets. It discusses the very important basic element of safety and sanitation in athletics, and those things which have so much to do with safety, namely: the facilities for athletics. There is a chapter on intramural athletics which, after all, is the foundation on which a true interscholastic program should be built. It also mentions athletics for girls. The brief discussion of junior high school athletics is not emphasized as much as the reviewer could wish. Great danger rests in interscholastic competition at that age level, where chances of strain and injury are so great.

This text has a great deal of practical information valuable to those who, either from the health viewpoint or

from that of education, have to do with administration at the secondary school level. This is the sort of text that is badly needed in the field of secondary school physical education.

CHARLES H. KEENE

A Girl Grows Up—*By Ruth Fedder. New York: McGraw-Hill,* 1939. 235 pp. Price, $1.75.

Broad in scope and effectively written, this book meets the test of capturing the interest of the reviewer's 13 year old daughter as well as of other members of the family. Problems of 'teen-age girls and adjustments to be made in growing up—involving decisions in getting along with parents, boys, the world, and themselves—are examined and interpreted in the light of the author's years of experience while working with girls. A useful feature is a list of books you may want to read.

IRA V. HISCOCK

Pulmonary Tuberculosis: A Synopsis—*By Jacob Segal, M.D. Oxford University Press,* 1939. 150 pp. Price, $2.75.

This book tells the story of tuberculosis in synoptic form. It is concise and replete with well annotated cuts of roentgenograms illustrating cases taken from the author's own experience. The volume is in 7 divisions, each of which is designed to emphasize the latest advances and most modern concepts in treatment and prevention.

Under General Considerations the author defines pulmonary tuberculosis, describes the sources of infection, modes of spread, and, in simple language, the pathogenesis and pathology of tuberculosis. The second chapter is devoted to a description of the various clinical types of tuberculosis and is illustrated with 3 diagrams showing, respectively, the normal lungs, the active primary complex, and the healed primary complex, followed by 7 very fine reproductions of roentgenograms.

There are chapters on Symptomatology, Complications and Accidents in Pulmonary Tuberculosis, and Diagnosis. The section on Treatment takes up the greater part of the book and is illustrated by 28 reproductions of roentgenograms. In this the author discusses all types of treatment: hygienic régime, medicinal, chemical, physical, biological, surgical, and psychic. The last chapter is devoted to Prevention.

The foreword written by the late Dr. Coryllos states:

> It is a truism to say that the education of doctors and students in pulmonary tuberculosis has been neglected in the past and, unfortunately, is being neglected at the present. Patients with pulmonary tuberculosis had been considered as patients to get rid of by sending them away to the country or to sanatoria. But today, our conceptions on the management of the disease have completely changed. Collapse treatment, either by pneumothorax or by more drastic surgical procedures, has transformed this disease into a medico-surgical problem whose solution can be successfully carried out everywhere by the coöperation of the phthisiologist and the thoracic surgeon. However, the fate of the tuberculous patient remains in the hands of the practitioner and depends on his knowledge of the disease and his timely diagnosis.

The publishers are to be commended for the manner in which the roengenograms are reproduced, one on a page. This increases the size of the book, but adds greatly to its appearance and is attention compelling. The listing of illustrations is descriptive and well conceived. An index is provided. The printing and make-up are good.

The volume is recommended for physicians, medical students, nurses, and health workers. It is a companion to the more elaborate and more detailed texts on pulmonary tuberculosis. It will be welcomed by the profession as a "refresher" textbook.

BERNARD S. COLEMAN

Books and Babies — *By Garry Cleveland Myers and Clarence Wesley Sumner. Chicago: McClurg,* 1938. 116 pp. Price, $1.75.

A rare combination of child psychology and intimate knowledge of books suited to the varied ages and interests of young children has gone into the making of this book. The distinguished child psychologist, Dr. Myers, and Mr. Sumner, librarian and founder of the Mothers' Room of the Youngstown Public Library, have written a most interesting and instructive account of the part that the reading of books to children from 2 to 10 may play in the intellectual and emotional development of both the children and their parents.

Services that can be rendered by the library are clearly indicated, though artfully woven into brief accounts of the experiences of the librarian and the parents and children seeking knowledge and adventure in the realm of books.

The book is offered as a "joint effort in behalf of young children and their parents." It affords 2 hours of pleasant, informative reading with many excellent practical suggestions on the guidance and mental growth of the child, and points the way to further values in its field by its many pertinent references to other literature and by a carefully selected bibliography of books and magazines.

FREDERICK W. BROWN

Public Health Law—*By James A. Tobey. New York: Commonwealth Fund,* 1939. 414 pp. Price, $3.50.

Rapid expansion of public health activities, including the legal aspects of health administration, during the 13 years since the previous edition, has required considerable expansion and revision of this book, which may be safely recommended for the active use of anyone engaged in public health, whether administrator, educator, lawyer, or sanitary officer. This modern work on a basic subject reflects the author's wide experience and extensive study, it is written in an interesting style, fully documented, and well printed.

This book is more comprehensive and better arranged than the earlier edition and is the outstanding text in this field. Answers, based on court decisions, are given to many questions. The 21 chapters, supplemented with many references, deal with the law and administration, powers and duties of health departments, liability, legislation, and law enforcement.

IRA V. HISCOCK

Fundamentals of Physical Examination—*By George G. Deaver, M.D., B.P.E. Philadelphia: Saunders,* 1939. 299 pp. Price, $2.75.

This book is designed primarily as a textbook or manual for medical students, public health nurses, and physical educators. It is set up with due regard to pedagogical principles with lessons to be written, laboratory work to be carried out, and self-tests at the end of each chapter. The material is laid out systematically with chapters devoted to the special senses and systems of the body with a minimum of words and a goodly number of illustrations. Normal structure and function are described briefly in conjunction with departures from normal. It is encouraging to note that in the chapters on "The Eyes" and "The Ears," the uses of the ophthalmic telebinocular and the audiometer are recommended especially as "screening" instruments in testing school children. It is questionable, however, whether this book should be placed in the hands of physical educators and nurses with the implication that it will equip them to diagnose or treat many of the pathological conditions which are described.

RICHARD A. BOLT

Nutrition and Physical Degeneration: A Comparison of Primitive and Modern Diets and Their Effects —*By Weston A. Price, M.S., D.D.S. New York: Hoeber,* 1939. 431 pp. Price, $5.00.

This most interesting book is the outcome of study by the author undertaken primarily to determine the cause of dental caries. To this extent the title does not give a fair idea of the compass of the book. The author's thesis may be summed up in the statement that the cause of tooth decay "is controlled directly by nutrition"; that civilization has been anything but a blessing to mankind, and that many primitive racial stocks even in the first generation after the adoption of the modernized diet, and while the blood is still pure, have shown degenerative processes quite like those which characterize America and Europe. He goes further in holding that changes take place in the facial and dental arches, and indeed that accompanying these changes there are many other deteriorative changes in personality and in physical and mental characteristics. He feels that his work is of direct interest to medicine and dentistry as well as to the social organizations concerned with the betterment of racial stock.

His travels have been world-wide. The groups investigated represent a fairly complete cross-section of the racial stocks of the world, Swiss, Gaelics, Eskimos, Canadian and Florida Indians, Africans, South Sea Islanders, Australian Aborigines, Malay tribes, Maori of New Zealand, and South Americans of the Amazon basin and the ancient civilizations of the west coast of that country. Chemical analyses of the foods of some of the isolated groups as well as of those which have displaced them in the process of civilization were made.

The author recognizes that the application of his findings and his conclusions are not orthodox, but since our orthodox theories have not saved us it may be necessary to readjust them to bring them into harmony with Nature's laws.

The Foreword by Professor Hooton has a pertinent suggestion along this same line—Why have we been so "stupid" as to concentrate our attention upon finding out why our teeth are so poor and never trying to learn why the teeth of primitive races are good?

The book is a rather remarkable study which covers the primitive racial stocks, both isolated and modernized, of almost every part of the world. Quoting the statement that a good illustration is equivalent to a thousand words, the author gives 6 maps and 134 illustrations, reproductions of excellent photographs. Many of these show comparative pictures of Aborigines who have not yet come into contact with civilization, with the same people who have been "civilized."

No one can doubt the accuracy of Dr. Price's observations or the careful study that he has given to them. His interpretations are open to more criticism but it does seem to be a fact that practically every primitive race which has been studied is largely free from the dental disturbances which affect practically everyone in the so-called civilized countries.

There are some statements which are inexact. For example, the required intake of phosphorus is given differently in different parts of the book—the last amount, 2.64 grams, being high. The amount of iron also is high. On page 265 we are told that the guinea pig is probably the most efficient of animals in synthesizing vitamin D from plant foods. The statement that chlorophyll is the precursor of vitamin A does not seem to be substantiated. We are told also that diabetes is prevented as well as cured by the extract of a plant found in British Columbia.

Other statements require substantiation, and one gathers the impression that the author has accepted some stories as facts without proper verification.

The book goes far to establish what many have already believed—that defective nutrition is the cause of deficiencies which lead to tooth decay as well as to other ills of the human body, of which caries is only one evidence. Whether this is due to deficiency in one substance or several is not known. Instead of putting the blame for caries on one particular type of food, such as carbohydrates, the author believes that we should lay more stress on the lack of some factor, the presence of which is necessary to prevent the untoward action which we now believe to be the cause of caries. He has compiled an impressive volume of evidence to support his contention. The criticisms as to certain facts do not overthrow the mass of evidence that he has collected showing the relation between faulty nutrition and faulty teeth. While the book is very interesting, we consider it also a most important contribution to the understanding of its primary object; namely, the determination of the cause of dental caries. The make-up and printing are excellent. C. F. ELZEA

Nursery School Education—*By Josephine C. Foster, Ph.D., and Marion L. Mattson, Ph.D. New York: Appleton-Century,* 1939. 361 pp. Price, $2.50.

For those who wish information themselves on the subject of the nursery school, or for persons such as doctors, nurses, social workers, or teachers who need to instruct others, scarcely a book could be found with more helpful specific information and suggestions. It is written from a scientific point of view, yet is most practical because backed by years of actual experience which the authors have spent working in the field of nursery school education.

Usually those who question the value of nursery schools do not know what, as the editor says, "should happen to children who live in a well managed nursery school." In simple, readable language which the lay person can easily understand such subjects as the following are discussed: What is a nursery school? Of what value is nursery school experience for children? What are its objectives? What equipment, what specific methods and technics are considered by authorities in the field of child study as best to use with young children?

The book contains a fine list of references on the subject, as well as many excellent pictures of the activities of young children as found in good nursery schools. It is a splendid source book. ETHEL GORDON

Handbook on Tuberculosis for Public Health Nurses—*By Violet H. Hodgson, R.N. New York: National Tuberculosis Association,* 1939. 92 pp. Price, $.50.

Nurses everywhere will appreciate this compact volume on tuberculosis. The author has drawn on expert opinion in the field and, with a personal background of experience in matters pertaining to tuberculosis nursing, especially from the public health viewpoint, presents information that should be part of the stock-in-trade of every public health nurse.

In addition to chapters of general information about tuberculosis and community relationship, the sections on procedure and technics are preceded by A Concept of Tuberculosis Nursing, which strikes the keynote of relative values in adequate and proper tuberculosis nursing, whether in a generalized or specialized program.

Technics and procedures are de-

scribed succinctly in the sections on Case-Finding, Home Visiting, Nursing Supervision—When and How Long, Substitutes for Home Visiting, Nursing Records, Chest Clinics, What to Teach the Patient and the Family, and Hospital Regimen in the Home. Responsibilities are defined clearly throughout the manual. Attention is also given in respective chapters to the nurse's part in securing hospital care for the patient and the importance of being able to interpret satisfactorily to the patient and family the significance of collapse therapy when indicated. A chapter on Appraisal of the Nursing Service concludes the manual.

The handbook is a worthy successor to Mrs. Hodgson's earlier *Tuberculosis Nursing for Public Health Nurses* and the more detailed manual she produced for the New York State Department of Health. It is very well written and deserves a place in the kit of every public health nurse. It is also valuable for teaching purposes.

BERNARD S. COLEMAN

Health Facts for College Students—*By Maude Lee Etheredge, M.D., Dr.P.H. (3rd ed.) Philadelphia: Saunders,* 1939. 410 pp., 65 ill. Price, $2.00.

This third edition of *Health Facts* follows the same general plan as the earlier ones, but it has been lengthened somewhat. It deals primarily with problems of personal hygiene. Three chapters are devoted specially to public health practices, namely "Water Supply and Sewage Disposal: Their Relation to Disease," "Diseases Conveyed by Insects," and "Supervision of Public Health." There is a chapter on communicable diseases, and various references to public health problems are found in other parts of the book.

The book aims to present a brief and simple statement of essential health facts. It is written for the most part in short, simple sentences and avoids technical detail. The reader would enjoy an improvement in the quality of the illustrations. C. E. TURNER

The Newer Knowledge of Nutrition—*By E. V. McCollum, Ph.D., Sc.D., LL.D., Elsa Orent-Keiles, Sc.D., and Harry G. Day, Sc.D. (5th ed.) New York: Macmillan,* 1939. 701 pp. Price, $4.50.

Twenty-one years have passed since the first edition of *The Newer Knowledge of Nutrition,* and 10 years since the fourth edition appeared, written in collaboration with the present reviewer. In the meantime the field of nutrition has become an indispensable ally of the dentist and the physician, and a potent factor in public health endeavor. Tremendous strides have occurred in studies of the fundamentals of nutrition as well as the ascertainment of requirements for specific nutrients in health and disease. This extended scope of nutrition has required skill in organization and composition, as well as a masterly understanding of the literature, to produce a book which aims, as stated in the preface, to make ". . . a concise survey of the field of nutrition, which is more extensive and more inclusive than any other now available . . ." There is no doubt that the authors have accomplished their objective, and in a simple, attractive style which encourages absorbing interest in the subject.

The first two chapters orient the reader, since they are essentially historical, and trace the development of modern concepts of nutrition. Each of its succeeding 25 chapters is concluded with a list of selected references. An appendix gives tables on the nutritional value of foods as respects vitamins and proteins. The effects of various dietary deficiencies are illustrated.

The authors have presented the

present knowledge of nutrition in a comprehensive manner, including both fundamentals and applications; and there is no doubt that their hope will be realized ". . . that the book will meet the needs of all who are . . . seeking to determine what is sound and what is misinformation in respect to the nutritive needs of the several species including man . . . and the means of dealing effectively with these nutritional problems." The book will be a valuable aid not only to nutritionists but to all persons interested in public health. NINA SIMMONDS

Physical Education in the Elementary Grades—*By Strong Hinman. New York: Prentice-Hall,* 1939. 523 pp. Price, $2.00.

More and more books on physical education are acknowledging the importance of health education. This text is one that indicates that more than just big muscle activity needs to be considered in physical education programs. The author includes what is generally accepted to be the model for school health services. The opening chapters, which deal with the relationships between physical and health education and a modern program of health and physical education, state well what makes up a modern program in the elementary school grades. Inexperienced teachers of physical education would find a great deal of help from such topics as integration and program planning.

More than ordinary thought has been given to including a weekly lesson on health education. However, since the book is primarily a handbook of activities for the elementary grades, one is rather disappointed in not finding more material for the actual integration of health with the physical education program.

The handbook material is nicely divided into story plays, plays set to music and rhythm for the early grades. Rhythmical activities, folk dances, relays, and athletic games of low organization are carefully graded for the higher elementary years. The final chapters are devoted to conditioning and corrective exercises. Athletic badge tests, and stunts in self-testing activities provide a great deal of material that adds variety and spice to a good physical education program.

D. B. TREAT

The Biology of Bacteria: An Introduction to General Microbiology—*By Arthur T. Henrici, M.D. (2nd ed.) New York: Heath,* 1939. 494 pp. Price, $3.60.

One is pleased to see a second edition of a book of this informative kind. It indicates that a particular need for such a text is being satisfied and that the subject has progressed sufficiently to justify revision. This edition continues the same interesting and accurate presentation of material which was characteristic of the earlier one, omitting some sections and adding others, as indicated by the development of newer knowledge, such as the work of Karström on constitutive and adaptive enzymes, and the use of sulfanilamide in the treatment of bacterial infections.

Two new chapters on ecology have been added, the first dealing with the effect of environmental factors on bacteria, and the second with the distribution of bacteria in soil, water, milk, and the human body. A summary of Knight's grouping of bacteria on the basis of nutrient requirements and a short discussion of the rapidly developing and increasingly important subject of accessory growth-promoting substances for bacteria has been included in the first of these chapters. Although no attempt has been made to have this include much of the more recent information on the subject, it

should serve to arouse in the student an interest in this fundamental aspect of bacteriology.

The author is to be commended for having presented the subject matter of bacteriology in an interesting manner and in such a way as to emphasize properly the subject as a fundamental biological science, a knowledge of which is so necessary to the intelligent study of its applications. One might hope that, for the future development of bacteriology, such a book would come to the attention of college administrators who still think only of the applications of bacteriology, rather than of the subject as a fundamental biological science.

The volume has been increased in size by 22 pages and has the excellent illustrations and make-up of the first edition. The nomenclature and classification used is in accord with the recent fifth edition of *Bergey's Manual.*

NEWELL R. ZIEGLER

A College Course in Hygiene—*By K. Frances Scott, M.D. New York: Macmillan,* 1939. 202 pp. Price, $2.50.

A reviewer approaches this work with kindly feelings since there is no jacket filled with "blurb" and no letter of recommendation by some supposed authority. "Good wine needs no bush."

For convenience the treatment is in two sections, personal and group hygiene, approximately two-thirds and one-third respectively, each introduced by a "Foreword." The author holds correctly that while the problems of everyday living involve the "entire alphabet of sciences, from agriculture to zoölogy," understanding of the body is fundamental, so the first part gives its structure, functioning, and pathology, while the second considers the emotions and intellect, inheritance, group customs, all the environmental factors which influence health and measures which may be taken to improve these.

The text is clearly and interestingly written and factually in accord with our knowledge. Most basic topics have sections on the "disorders" and "hygiene" of the organs or functions described which are expected to be supplemented by lectures, discussions, and readings. Suggested readings at the end of chapters are too numerous and many beyond the understanding of the average college student.

The author is Associate Professor of Hygiene at Smith College and the book is addressed to girls. Students are referred to in the text as "she" and "her" though there is good material for men also. Sex is discussed without hesitation in plain language, which is in accord with present ideas.

There is an adequate index. Bound in at the back are 14 leaves called "Workbook," perforated for tearing out and also for loose-leaf binding. The binding is "ring" so that the book lies flat when opened. The printing is clear and the illustrations are well selected. The author has produced a balanced and useful text which can be recommended. MAZŸCK P. RAVENEL

Oh, Doctor! My Feet!—*By Dudley J. Morton. New York: Appleton-Century,* 1939. 116 pp. Price, $1.50.

The author of the scholarly and important textbook, *The Human Foot,* has now undertaken to write in a popular vein on foot ailments. His announced purpose of starting people to thinking and talking about their painful and uncomfortable feet is most commendable. There is great need that the public appreciate the importance of comfortably functioning feet, and that foot sufferers learn that ailing feet deserve professional care just as much as any other part of the body.

All the points made are true and important, but are perhaps too technical to be digested by the average individual, unacquainted with the evolution, anatomy, and physiology of the human foot. The material would seem to be over the heads of those whom Dr. Morton is striving to inform and so loses a great part of its educational value.

Dr. Morton stresses the importance of X-ray examination in the diagnosis of foot disorders, and rightly so, but this importance seems overemphasized in a book of this character. The purpose is to encourage the foot sufferer to seek competent advice for relief of his difficulties. Today practically every large store is equipped with an X-ray machine, which is used to demonstrate the fit of the shoe. When we realize how disposed the layman is to believe that an X-ray reveals all that is to be known of his condition, it can readily be seen that many may be misled into thinking that as their feet have been X-rayed by the shoe salesman, he knows all about their foot difficulties, when, in fact, such X-rays reveal nothing except the position of the foot in the shoe. The public has yet to learn that it is not the X-ray shadows which are important, but the interpretation of these shadows.

That section of the book which deals with shoes is excellent. The fallacy of accepting every so-called "orthopaedic shoe" at its face value is clearly shown, and easily understandable suggestions for the selection of a proper type of shoe are given. The chapter devoted to footwear gives a clear guide to the proper clothing of the foot.

While Dr. Morton's contention that all foot discomfort is traceable to "a lazy first metatarsal bone," and all that is necessary for the relief of foot discomfort is that this lazy beggar be made to do its share of the work is open to question, he is to be commended for his effort to make the public foot-conscious, and for the dignified way in which he has handled a subject which mass lay advertising has made almost a by-word. *Oh, Doctor! My Feet!* can be read with profit by the public, particularly by the parents of growing children, as it will give them much information regarding a very important and much abused part of the body. It may be added that it would make excellent reading for most physicians as well. FRANK D. DICKSON

Text-Book of Meat Hygiene: With Special Consideration of Antemortem and Postmortem Inspection of Food-Producing Animals—*By Richard Edelmann, Ph.D. (7th ed. by John R. Mohler and Adolph Eichhorn.) Philadelphia: Lea & Febiger,* 1939. 463 pp. Price, $5.50.

This book has been before the public for a number of years and with the first edition took its place as a standard. The demand for a seventh edition is an index of its value. This revised edition has been brought up to date by changes which make it conform with our most recent knowledge of a pathological conditions which might render meat unfit for consumption.

A new section dealing with the ductless glands has been added, since the hormones extracted from the glands of animals are now being extensively used in the treatment of some conditions of the human body. The Federal Meat Inspection of the United States (Chapter IV) is believed to be the most complete in the world; hence, the editors have incorporated all additions and amendments made to the regulations since the previous edition of this book. For the same reason certain equipment which was figured in the original German publication has been replaced by cuts and descriptions of American apparatus, since the designs are in advance of those formerly used. This particular

apparatus is in use for rendering both the edible and inedible portions of carcasses of animals.

The book is abundantly illustrated and the make-up and printing are excellent. One can say with certainty that this edition will maintain the high place established by previous ones. As a practical guide as well as reference it can be recommended without reservation.

MAZŸCK P. RAVENEL

BOOKS RECEIVED

PATHOGENIC MICROÖRGANISMS. By William Hallock Park and Anna Wessels Williams. 11th ed. Philadelphia: Lea & Febiger, 1939. 1056 pp. Price, $8.00.

HANDBOOK OF BACTERIOLOGY FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By Joseph W. Bigger. 5th ed. Baltimore: Williams & Wilkins, 1939. 466 pp. Price, $4.25.

THE DYSENTERIC DISORDERS. By Philip Manson-Bahr. Baltimore: Williams & Wilkins, 1939. 613 pp. Price, $8.00.

HISTORY OF TROPICAL MEDICINE. Based on the Fitzpatrick Lectures. By Harold Scott. Baltimore: Williams & Wilkins, 1939. In Two Volumes. Price, $12.50.

BACK TO SELF-RELIANCE. By Matthew N. Chapell. New York: McGraw-Hill, 1939. 239 pp. Price, $2.00.

HEALTH FOR NEW YORK CITY'S MILLIONS. Annual Report of the Department of Health of the City of New York for the year ending December 31, 1938. New York: Department of Health, 1939. 295 pp.

STEDMAN'S MEDICAL DICTIONARY, ILLUSTRATED. By Thomas Lathrop Stedman and Stanley Thomas Garber. 14th rev. ed. Baltimore: Williams & Wilkins, 1939. 1303 pp. Price, $7.50.

INTRODUCTION TO MOTHERHOOD. By Edwin F. Patton. South Pasadena: Commercial Textbook Co., Ltd., 1938. 137 pp. Price, $1.50.

PRECLINICAL MEDICINE. Preclinical States and Prevention of Disease. By Malford W. Thewlis. Baltimore: Williams & Wilkins, 1939. 223 pp. Price, $3.00.

THE SANITARY INSPECTOR'S HANDBOOK. A Manual for Sanitary Inspectors and other Public Health Officers. By Henry H. Clay. 4th ed., enl. and ill. London: H. K. Lewis & Co., Ltd., 1939. 528 pp. Price, $5.25.

OPHTHALMOLOGY. By Burton Chance. New York: Hoeber, 1939. 240 pp. Price, $2.00.

PEDIATRICS AND PEDIATRIC NURSING. By A. Graeme Mitchell. Echo K. Upham and Elgie M. Wallinger. Philadelphia: Saunders, 1939. 575 pp. Price, $3.00.

A TEXTBOOK OF PRACTICAL NURSING. By Kathryn Osmond Brownell. Philadelphia: Saunders, 1939. 418 pp. Price, $3.00.

BACTERIOLOGY. By William W. Ford. New York: Hoeber, 1939. 207 pp. Price, $2.50.

NUTRITION AND THE DIET IN HEALTH AND DISEASE. By James S. McLester. 3rd ed. Philadelphia: Saunders, 1939. 838 pp. Price, $8.00.

GONORRHEA IN THE MALE AND FEMALE. By P. S. Pelouze. 3d ed. Philadelphia: Saunders, 1939. 489 pp. Price, $6.00.

YOUR CHILD'S FOOD. By Miriam E. Lowenberg. New York: McGraw-Hill, 1939. 299 pp. Price, $2.50.

THE CARE AND HANDLING OF MILK. By Harold E. Ross. rev. and enl. New York: Orange Judd, 1939. 417 pp. Price, $4.00.

SUPERVISION IN PUBLIC HEALTH NURSING. By Violet H. Hodgson. New York: Commonwealth, 1939. 376 pp. Price, $2.50.

PRINCIPLES OF HEALTHFUL LIVING. By Edgar F. Van Buskirk. New York: Cordon, 1939. 386 pp. Price, $2.25.

WHY QUIT OUR OWN?—Offering an American Program for Farm and Factory. By George N. Peek, with Samuel Crowther. New York: Van Nostrand, 1936. 353 pp. Price, $.50.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Vulnerable Teeth—Here in Harpers you will find an excellent article on the teeth and what ails them. The author suggests that some day some enterprising drug house will furnish us with a concentrate of all the essentials that the Eskimo gets in the raw fish and meat that seem to assure him a set of lifetime teeth. Until that blessed event occurs, the author suggests what we may do.

ALVAREZ, W. C. Why Can't We Have Perfect Teeth? Harpers No. 1073, p. 498 (Oct.), 1939.

Hazardous Benzol Fumes—Five fine papers, taking up the entire issue of this magazine as they do, must surely furnish all that health officials will need to know about the hazard of exposure to benzol vapor. This pompous conclusion is based upon a reading of the first three of the 114 fact-filled pages and a glance at the summaries of each paper.

BOWDITCH, M., *et al.* Chronic Exposure to Benzine (Benzol), I. The Industrial Aspects (and four related papers). J. Indust. Hyg. and Toxicol. 21, 8:321 (Oct.), 1939.

Much about Pneumonia—In this symposium, serotherapy, chemotherapy, and general treatment measures are reviewed in detail. Much more of the discussion than one might suppose is of immediate interest to health administrators, for good treatment has prophylactic as well as therapeutic values. So the series is respectfully commended to all health officers.

BULLOWA, J. G. M., *et al.* Serotherapy of the Pneumonias (and three related papers). J.A.M.A. 113, 15:1402 (Oct. 7), 1939.

An Inside Job of Public Relations—How the health department staff can make a real contribution to the school health program is told in practical detail based upon successful experience. In similar vein is discussed methods by which classroom teachers can be induced to take an intelligent interest in health education.

CHOPE, H. D. How Can the Health Department Contribute to the School Health Program? J. School Health. 9, 8:223 (Oct.), 1939.

You Can Make the Horse Drink Water—This prescription for sound health education—select those who can best use it, utilize most effective channels, write clearly and avoid professional lingo, take time to be brief and shun statistics and generalities, tell a good story, and apply the facts to people's problems—is propounded by one who has put it to good effect in teaching mothers and fathers about safe maternity.

CORBIN, H. Teaching the Public About Maternity. Pub. Health Nurs. 31, 11:598 (Nov.), 1939.

Helping to Picture Health Needs—A procedure is proposed by which the actual health problems or accomplishments of a community may be interpreted by a relativity scale which indicates the standing among other communities in any of several indexes.

DERRYBERRY, M. A Procedure for Putting Health Department Reports to Work. Pub. Health Rep. 54, 38:1709 (Sept. 22), 1939.

To Vaccinate or Not—Vaccination with *H. pertussis* vaccine at 6-15 months

of age did not lower the incidence of whooping cough during the following 3½ years when the immunized children were compared to a control group. The attacks may have been somewhat milder.

DOULL, J. A. Active Immunization Against Pertussis. Am. J. Dis. Child. 58, 4:691 (Oct.), 1939.

How to Immunize against Diphtheria—A brief but dramatic account of Ramon's discovery of anatoxine enlivens this rather detailed discussion of the prophylactic values of the various toxoids. But at the end is this whopping schedule for infant pincushions: 3–6 mos., smallpox vaccination; 6–8 mos., whooping cough; 9–12 mos., diphtheria toxoid; 18 mos., reinforcing whooping cough vaccine; 1–2 yrs., scarlet fever toxin; 2–4 yrs., reinforcing dose of toxoid; and 5–10 yrs., a repeat smallpox vaccination. At the end it is suggested that somewhere in the schedule a shot of tetanus and some typhoid fever inoculations would add to the gaiety of the child's life.

FRASER, D. T. Diphtheria Toxoid Canad. Pub. Health J. 30, 10:469 (Oct.), 1939.

Historical Note—In this graphic account of the devastation resulting from an invasion of yellow fever into a quiet peaceful college community, the health publicist will find some excellent material on which to try his craftsmanship. A first-hand account of the last yellow fever epidemic is a jewel of the first water.

HERRICK, G. W. The Last Epidemic of Yellow Fever. Sci. Month. 49, 5:401 (Nov.), 1939.

Treatment for Early Syphilis—Massive doses of arsphenamine given on succeeding days by a continuous administration method are reported as producing immediate results and serological cures in most early cases. Warning is given that massive dose therapy is still in an experimental, though promising, stage.

HYMAN, H. T., *et al.* Massive Dose Therapy of Early Syphilis by the Intravenous Drip Method. J.A.M.A. 113, 13:1208 (Sept. 23), 1939.

Counting Sheep Now Passé—What will our vitamins cure next? It seems that vitamin B and ascorbic acid may help prevent insomnia, especially in old people and alcoholics.

KARNOSH, L. J. The Treatment of Insomnia. J.A.M.A. 113, 14:1322 (Sept. 30), 1939.

Family Size and Income—When we glibly view-with-alarm the failure of "the best" people to produce their quota of children, we must first be sure we know what we are talking about. If we base fertility rates on *all* women, the generalization that the better off they are, the fewer the children they have, is true; but if *married* women alone are considered, there is more nearly an equality in fertility rates among those who have sufficient family incomes and those who have not.

KARPINOS, B. D., and KISER, C. V. The Differential Fertility and Potential Rates of Growth of Various Income and Educational Classes of Urban Populations in the United States. Milbank Quart. 17, 4:367 (Oct.), 1939.

More about Pneumonia—Here in a half dozen pages is set forth all that health workers generally will need to know about the newer methods for the treatment of pneumonia. They will learn that chemotherapy, as effective as it has proved to be, does not relieve them from their educational responsibilities. Pneumonia, the public must be told constantly, is still a medical emergency that needs prompt and immediate care; typing is still vitally important, so laboratory services must be maintained for, in appropriate cases, serum therapy should be combined with chemotherapy.

LORD, F. T. Chemotherapy and Serotherapy of Pneumonia. New Eng. J. Med. 221, 15:570 (Oct. 12), 1939.

Where Air Sirens Wail—Here's hoping that we, hereabouts, will never have more than an academic interest in these two papers concerning air raid precautions which, in England, are organized under the Ministry of Health, which turns over to the local health official the responsibility for administration in his community.

MURCHIE, F., and BRUCE, C. R. Medical Air Raid Precautions (two papers). J. Roy. Inst. Pub. Health & Hyg. 2, 10:599 (Oct.), 1939.

Nursing Contributions to Child Health—Most of the time of the school nurse should be spent, not in school, but in the homes of the children, educating parents. Usually most of her working day is taken assisting in physical examinations or teaching health in classrooms rather than teaching teachers, or helping the individual children who need guidance. Remedies are considered.

ROSS, G. The Nurse's Contribution to the School Health Program. J. School Health. 9, 8:236 (Oct.), 1939.

In Place of Hog and Hominy—If we substitute nicotinic acid therapy for adequate southern diets, some other deficiency disease will probably replace pellagra as a public health problem. Dietary guidance and the stimulation of kitchen gardens are what the south needs most.

SEBRELL, W. H. The Nature of Nutritional Diseases Occurring in the South. Milbank Quart. 17, 4:358 (Oct.), 1939.

About Communicable Diseases—Brief, but very much to the point, is this resumé of the present status of our knowledge about scarlet fever, diphtheria, meningitis, whooping cough, mumps, measles, and poliomyelitis. The forty references in the bibliography should give the epidemiologist plenty of mental ammunition.

WESSELHOEFT, C. Contagious Diseases. New Eng. J. Med. 221, 17:655 (Oct. 26), 1939.

Preventable Cancer Deaths—In New York City 15 per cent of all deaths were due to cancer. A large number of the 11,160 cancer fatalities might have been prevented. Here is a challenge which is discussed from a dozen different angles to make a most useful health educational symposium.

WOOD, F. C., *et al.* The Need for Educating the Public on Cancer (and other papers). Neighborhood Health (N. Y. City). 5, 6:1 (Nov.), 1939.

ASSOCIATION NEWS

THE SEDGWICK MEMORIAL MEDAL

Excerpt from the citation of Thomas Parran, M.D., who was awarded the Sedgwick Memorial Medal "for distinguished service in public health"

Milton J. Rosenau, M.D., *Chairman* of the Sedgwick Memorial Medal Committee:

"Public health in this country is fortunate in having at the helm a pilot who steers a clear course toward a health haven called health heaven. Dr. Thomas Parran, our Surgeon General, is a rare combination of sanitary statesmanship with a sound foundation

Thomas Parran, M.D.

of experience in the practice of our art and a firm knowledge of the science that underlies good health administration. Dr. Parran has a fine feeling for the socially unfortunate and is ever ready to give a helping hand to the under-privileged.

"It is my personal pleasure and official duty to award him the Sedgwick Memorial Medal for services to humanity with this citation:

"Courteous in thought and act, courageous in plan and execution of new concepts for the public good, precise and consistent in the conduct of the affairs of science as in the offices of the government, Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service and Past-President of The American Public Health Association, to whom the Sedgwick Medal is now awarded, has endeared himself to his professional colleagues by his personal modesty in the midst of national acclaim and distinction, and to all who know him and know of him by his ringing challenge to action against the inertia and indifference of the generations to neglected human health. We rejoice in your honors and share in universal confidence in your leadership in public health."

Response of Dr. Parran:

"I am honored to receive at your hands, Dr. Rosenau, this symbol commemorating the name of Dr. Sedgwick, the great pioneer in public health.

"At this time also, I feel it particularly appropriate that we should be reminded of a passage in Dr. Sedgwick's presidential address before this Association, 24 years ago, as we stood aghast before the first World War. He said:

"'It may seem to some as if, under the shadow of a war characterized as never before by the destruction of life, efforts for saving life through hygiene and sanitation must be of small matter.

"'But it is not so. After the clouds, the sun. And we believe that after the present bloody conflicts are ended . . . the eternal principles underlying the nobler pursuits of Life, Liberty, Health and Happiness will once more move and inspire the nations as sunshine warms and quickens the earth after a storm. Meantime, we must prepare for active and intelligent dealing with the thousand new and mighty problems which these wars are certain to bring before us, and to this task we turn with cheerful courage.'

"Even more than in 1915, it is important that we should be aware of what is in the world about us, yet refuse to be overwhelmed by it.

"For my part, and for those associated with me, may I say that we shall give all that we have of effort and devotion that the high traditions of the search for new knowledge and its application to the saving of life may go forward here in America though in other nations of the earth it may be swept aside."

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers

Daniel Bergsma, M.D., 1671 Pennington Road, Trenton, N. J., Medical Assistant, Venereal Disease Control, State Dept. of Health

Alvin R. Clauser, M.D., M.S.P.H., District Health Office, Los Lunas, N. M., Health Officer, Dept. of Public Health

Bert H. Malone, M.D., C.P.H., Box 23, Waycross, Ga., Regional Medical Director, State Dept. of Health

Charles E. McPartland, M.D., 29 S. Main St., West Hartford, Conn., Health Officer and Registrar of Vital Statistics

Gilbert P. Pond, M.D., 1140 Lake St., Oak Park, Ill., Commissioner of Health

Laboratory Section

Abraham Cantor, M.A., Laboratories of Public Health and Preventive Medicine, Univ. of Pennsylvania, Philadelphia, Pa., Instructor in Bacteriology

Herbert M. Smith, M.D., State Board of Health, Columbia, S. C., Director, Hygienic Laboratory

Vital Statistics Section

Frances M. James, M.A., 5304 New Hampshire Ave., N. W., Washington, D. C., Statistical Research Division, Children's Bureau

Engineering Section

William J. O'Connell, Jr., 171 2nd Street, San Francisco, Calif., Technical Expert and Sanitary Engineer, Wallace & Tiernan Co., Inc.

Thomas M. Sperbeck, A.B., 2810 Oakland Ave., Nashville, Tenn., Trainee, Vanderbilt University

Industrial Hygiene Section

E. M. Adams, Ph.D., 501 E. Grove St., Midland, Mich., Industrial Hygiene Research, Dow Chemical Co.

Robert H. Flinn, M.D., National Institute of Health, Bethesda, Md., Passed Assistant Surgeon, U. S. Public Health Service

Augustus F. Galloway, M.D., Room 301, State House, Boise, Idaho, Director of Industrial Hygiene, State Division of Public Health

Food and Nutrition Section

Mabel R. Stimpson, B.S., C.P.H., 203 N. Wabash Ave., Chicago, Ill., Nutrition Supervisor, Infant Welfare Society of Chicago

Maternal and Child Health Section

Robert C. Hood, M.D., Children's Bureau, Washington, D. C., Director, Crippled Children's Division

Emily L. Ripka, M.D., M.P.H., Michigan Dept. of Health, Lansing, Mich., Regional Consultant, Bureau of Maternal and Child Health

Public Health Education Section

Paul W. Barenberg, A.B., C.P.H., 222 Cabot St., Beverly, Mass., Executive Secretary, Essex County Health Assn.

Dorothy R. Denniston, M.A., 69 Henry St., Binghamton, N. Y., Executive Secretary, Broome County Tuberculosis and Public Health Assn.

Elizabeth M. Kliewer, R.N., 1211 Harvard, Fresno, Calif., Director of Indian Welfare, Fresno County

Philip M. Law, M.D., 706 S. Wolcott St., Chicago, Ill., Director, Division of Mental Hygiene, Univ. of Loyola

Catherine F. Smulling, R.N., 212 S. Allen St., State College, Pa., Public Health Nurse, American Red Cross

Elizabeth A. Taylor, M.D., Box 3837, Denton, Tex., Physician and Director of Health Service, Texas State College for Women

Elmo W. Tucker, D.M.D., 430 Rialto Bldg., Butte, Mont., Orthodontist

Public Health Nursing Section

Hilda M. Brandt Carlson, 2917 West 76th St., Los Angeles, Calif., School Nurse, Los Angeles Board of Education

Marie E. Smith, R.N., Box 1124, Grants, N. M., Public Health Nurse, Valencia County Health Dept.

Grace M. Tubbs, R.N., 213 E. 9th St., Winfield, Kans., Visiting Nurse, Winfield Public Health Nursing Assn., Inc.

Frances D. Williams, 420 State Office Bldg., Denver, Colo., District Orthopedic Nurse, Division of Public Health Nursing, State Dept. of Health

Epidemiology Section

Joseph A. Bell, M.D., C.P.H., National Institute of Health, Rockville Pike, Bethesda, Md., Passed Assistant Surgeon, U. S. Public Health Service

Thomas D. Dublin, M.D., 440 West 34th St., New York, N. Y., Physician-in-Training, State Dept. of Health

Carl C. Dudley, Health Dept., City Hall, Houston, Tex., Food and Sanitary Inspector

Ira C. Miller, M.D., 2711 Logan St., Camp Hill, Pa., Epidemiologist, State Dept. of Health

James Watt, M.D., Dr.P.H., Box 111, Albany, Ga., Assistant Surgeon, U. S. Public Health Service

Stafford M. Wheeler, M.D., New York State Health Dept., Albany, N. Y., Assistant in Epidemiology and Preventive Medicine, Harvard Medical School (on leave of absence)

Unaffiliated

Charles L. Ianne, M.D., Santa Clara County Hospital, San Jose, Calif., Director, Bureau of Tuberculosis, Santa Clara County Health Dept.

H. Allen Moyer, M.D., State Administration Bldg., Lansing, Mich., State Health Commissioner

Election of Ten Fellows to the Governing Council

THE nomination of 30 Fellows, carefully cosen for their Sectional affiliation and their geographic distribution by the Nominating Committee, has been noted in these columns. At the 68th Annual Meeting in Pittsburgh, October 17–20, 451 Fellows were registered, or 42 per cent of the Fellowship entitled to vote. Of the 262 ballots cast, 28 were disqualified by the tellers, leaving 234 qualified ballots. The following 10 Fellows were elected members of the Council for a 3 year term, expiring in 1942:

J. N. Baker, M.D.
Karl F. Meyer. Ph.D.
Harry S. Mustard, M.D.
George H. Ramsey, M.D.
W. S. Rankin, M.D.
Robert H. Riley, M.D.
L. R. Thompson, M.D.
W. Frank Walker, Dr.P.H.
Robert E. Wodehouse, M.D.
Hans Zinsser, M.D.

The Governing Council was advised of the election of Dr. James P. Leake of Washington as Chairman of the Epidemiology Section, which carries with it membership on the Governing Council. Dr. Dean Franklin Smiley of Ithaca, N. Y. was declared elected to the Council for the unexpired term of Dr. Leake, ending in 1941, since he had the next highest number of votes in the balloting.

EMPLOYMENT SERVICE

The Employment Service will register persons qualified in the public health field without charge.

Replies to these advertisements, when keyed, should be addressed to the American Public Health Association, 50 West 50th Street, New York, N. Y., identifying clearly the key number on the envelope.

Position Available

State department of health wishes to employ a physician trained in statistical work. Salary to begin not less than $3,000. **W442**

Positions Wanted

ADMINISTRATIVE

Physician, M.D., University of Cincinnati; with postgraduate training in venereal disease control, Johns Hopkins; is available as venereal disease control officer. **A363**

Physician, M.D., Vanderbilt University; Dr.P.H., Johns Hopkins; experienced as epidemiologist, health officer and professor of preventive medicine, seeks position as administrator or epidemiologist. **A397**

Physician, M.P.H., Harvard; well experienced in city and rural health administration, will consider appointment as district health officer or in city or state health department. **A418**

Well qualified physician, M.D., Rush; M.S.P.H., University of Michigan; with 3 years' residence in tuberculosis, and special interest in venereal disease control, seeks responsible appointment. Excellent references. **A406**

Physician, 32, M.D., 1936; postgraduate course in venereal disease control, experienced as district health officer and in organizing and publicizing syphilis control campaign; now employed in charge v.d. clinics in metropolitan health department; seeks v.d. control post with opportunity to organize or administer program. **A437**

Physician, with C.P.H. from Johns Hopkins, and some field experience with large state health department, wishes position in epidemiology or administration. **A443**

Physician, M.D., class A medical school; 12 years' full-time public health experience; now employed with state department of health; will consider opening with well organized city or state department in communicable disease division, or epidemiology, or both. **A409**

Physician, M.D., Syracuse University; postgraduate studies in bacteriology and immunology, will consider position as health officer or epidemiologist. Has served as director of county health unit, director of industrial hygiene and medical statistics and venereal disease field survey officer. **A305**

HEALTH EDUCATION

Well qualified woman in health education wishes position as director of health education or health counselor. Has wide experience, and Ph.D. from New York University. **H236**

Experienced teacher in public health and author; M.A., Columbia; experienced in teaching public health nursing and carrying field promotion, wishes broad opportunity to train field personnel in extending knowledge and interest to the general public, especially through group education, institutes, exhibits and rural programs. **H400**

LABORATORY

Experienced teacher in bacteriology and public health; Ph.D., Cornell; now professor in grade A medical school, will consider teaching, executive or administrative position. **M437**

Experienced teacher in bio-chemistry and bacteriology; Ph.D., Iowa; now laboratory director in midwestern state; will consider teaching, executive or administrative position. **L440**

Young woman bacteriologist, M.A., Columbia; experienced in bacteriology, serology, mycology, parasitology, water and milk analysis, and general public health laboratory work; seeks responsible position in laboratory work or teaching of bacteriology. **L444**

MISCELLANEOUS

Engineer with good training and experience in water treatment, sewage plant operation and in research, wishes position as superintendent. Can go anywhere. **E422**

Advertisement

Positions Open

COUNTY HEALTH OFFICERS—Several for rural districts in South; men under 35 required unless they have public health training or experience; training provided for young men now completing internship, or with general practice experience; southerners preferred. PH-120, Medical Bureau, Palmolive Buliding, Chicago.

STAFF PHYSICIAN — California sanatorium; physician with 2–3 years' training in tuberculosis, qualified to do minor lung surgery; $210, increasing. PH-121, Medical Bureau, Palmolive Building, Chicago.

WOMAN PHYSICIAN—Qualified for appointment in division of Maternal and Child Health; state department of health; South. PH-122, Medical Bureau, Palmolive Building, Chicago

STUDENT HEALTH PHYSICIAN—Young man or woman whose training has been primarily in internal medicine; exclusive college for women; midsouth. PH-123, Medical Bureau, Palmolive Building, Chicago.

SUPERVISOR—Graduate nurse qualified to supervise city-county public health unit; must have public health certificate; popular southwestern winter resort. PH-124, Medical Bureau, Palmolive Building, Chicago.

SUPERVISOR — Well-established public health nursing association; duties include directing staff of nine in bedside nursing program; fairly large city, 2 hours' drive from New York. PH-125, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—For supervising position, county health department; considerable public health experience required; $1,600, increasing; $500 travel expenses; midwest. PH-127, Medical Bureau, Palmolive Building, Chicago.

CLINIC SUPERVISOR—Must have certificate or degree in Public Health Nursing; $125; Texas. PH-128, Medical Bureau, Palmolive Building, Chicago.

STUDENT HEALTH NURSE—Duties largely general duty in college infirmary; $100, meals; junior college for women. PH-129, Medical Bureau, Palmolive Building, Chicago.

BACTERIOLOGIST-SEROLOGIST — City laboratory; $1,800–$2,000; midwest. PH-130, Medical Bureau, Palmolive Building, Chicago.

SENIOR TECHNICIAN—Public health laboratory; must be thoroughly trained bacteriology, tissues; public health experience required; $150; vicinity New York City. PH-131, Medical Bureau, Palmolive Building, Chicago.

Situations Wanted

PUBLIC HEALTH PHYSICIAN—Young man with M.S. in Public Health from university offering excellent course; unqualified recommendations from executives in public health field; for further information please write M. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—B.S. and graduate nurse degree, state university; one year's postgraduate training in public health nursing; several years' teaching experience; 2 years, supervisor, medical clinics, university hospital; for further information, please write M. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

YOUNG WOMAN PHYSICIAN—Extensive graduate training in pediatrics; 4 years, child hygiene division, state health department; several years, private practice pediatrics; wishes to return to full-time public health work; for further information, please write M. Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

BACTERIOLOGIST—B.S., eastern school; C.P.H. and Ph.D. (Bacteriology), Yale University; has done considerable research; 4 years, bacteriologist and research technician, public health laboratories; for further details, please write M. Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

NEWS FROM THE FIELD

NEW AFFILIATED SOCIETIES, A.P.H.A

THE Idaho Public Health Association and the Tennessee Public Health Association were elected as Affiliated Societies of the American Public Health Association at the Pittsburgh meeting in October, making twenty-one Affiliated Societies in all at the present time.

SOCIAL HYGIENE DAY

NATIONAL Social Hygiene Day, an annual American public health event, will be observed for the fourth time on February 1, 1940, it has been announced by the American Social Hygiene Association.

RADIO PROGRAMS

THE United States Office of Education, a part of the Federal Security Agency, has announced a series of educational radio dramas on Democracy in Action relating to the United States Government and health. Beginning in November, the last three programs will be given Sunday afternoons, December 3, 10, and 17, from 2:00 to 2:30 P.M., Eastern Standard Time, over the Columbia Broadcasting System.

The topic of the first of these programs is "If the Truth Be Known," an attack on disease through the microscope and test tube; the second, "A New Lease on Life," the story of Uncle Sam's special patients; the third, "Partners in Prevention," a review of national, state, and local agencies and their battle for health.

BARNARD TO ESTABLISH HEALTH EDUCATION PROGRAM

A HEALTH educational program for Barnard College, New York, has been announced. It will be called the Milbank Anderson Health Education Fund, in honor of Mrs. Anderson, who presented Milbank Hall and Quadrangle to the college.

WHITE HOUSE CONFERENCE

IT has been announced by Miss Katharine F. Lenroot, Chief of the Children's Bureau and Executive Secretary of the White House Conference on Children in a Democracy, that President Roosevelt approves the recommendation of the Planning Committee of the White House Conference for the meeting dates January 18, 19, and 20, 1940.

This White House Conference, which had its first meeting on April 26, 1939, in Washington, has as its purpose to consider the relationship between a successful democracy and the children who form an integral part of the democracy. A report committee has under preparation a report to be submitted at the conference, together with suggestions for a follow up program.

MICHIGAN PUBLIC HEALTH ASSOCIATION

THE Michigan Public Health Association held its 19th Annual Public Health Conference, in cooperation with the Michigan Department of Health, at Grand Rapids, November 8–10. More than a thousand members of the health professions attended the three day sessions.

The following new officers were elected for the forthcoming year:

President—Henry F. Vaughan, Dr.P.H.
President-Elect—Floyd R. Town, M.D.
Vice-President—Lena Schermann, R.N.
Secretary-Treasurer—Marjorie Delavan
Representative on A.P.H.A. Governing Council—John L. Lavan, M.D.

Among the principal speakers were: Dr. H. Allen Moyer, Commissioner; Surgeon C. C. Applewhite, of the U. S. Public Health Service; Dr. Burton R. Corbus, President of the State Medical Society; Dr. Paul H. Jeserich, President of the State Dental Society; Dr. Bert I. Beverly, of Chicago; and Dr. S. David Kramer, Secretary of the

National Foundation for Infantile Paralysis.

Holding their annual meetings in conjunction with the conference, were the Michigan School Health Association, The Michigan State Association of Sanitarians, the State Organization for Public Health Nursing, and the Children's Fund of Michigan.

The Michigan Public Health Association, at its annual business meeting, voted to hold its 1940 meeting at Detroit, in conjunction with the annual meeting of the American Public Health Association which will be held there next year. The association also voted to award all of its past presidents honorary keys, symbolic of their services to the association.

AMERICAN SCHOOL HEALTH ASSOCIATION

NEW officers elected by the American School Health Association in Pittsburgh, Pa., October 18, include:

President, Dr. Charles L. Outland, Richmond, Va.

President-Elect, Dr. Amos L. Beagler, Denver, Colo.

Vice-Presidents, Dr. James F. Rogers, Washington, D. C., and Dr. Helen Ahrens Cary, Portland, Ore.

Executive Secretary, and Treasurer, Dr. A. O. DeWeese, Kent, Ohio

CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

AT the meeting of the new society, the Conference of Municipal Public Health Engineers, held in Pittsburgh in October, the following officers were elected:

Chairman—Joel I. Connolly, Chicago, Ill.

Vice-Chairman—Aimé Cousineau, Montreal, Que., Can.

Secretary-Treasurer—Alfred H. Fletcher, Memphis, Tenn.

Executive Committee—F. Gardner Legg, Detroit, Mich.; Henry C. Lane, Pensacola, Fla.; James L. Barron, Hempstead, N. Y.; Arthur E. Gorman, Chicago, Ill.; William T. Ingram, Stockton, Calif.; Sol Pincus, New York, N. Y.

INTERNATIONAL SOCIETY OF MEDICAL HEALTH OFFICERS

NEW officers elected by the International Society of Medical Health Officers, elected in Pittsburgh, Pa., October 18, include:

President, Dr. Leon Banov, Charleston, S. C.

Vice-Presidents, Dr. James Roberts, Hamilton, Ont., and Dr. Angel de la Garza Brito, Mexico City, Mexico

Secretary, Dr. I. C. Riggin, Richmond, Va.

Directors, Dr. N. A. Upchurch, Jacksonville, Fla.; Frederick D. Stricker, Portland, Ore., and Dr. A. T. McCormack, Louisville, Ky.

THE ORAL HEALTH GROUP

THE Oral Health Group, an informal assembly of those in the American Public Health Association interested in oral health, again held sessions at the Annual Meeting in Pittsburgh in cooperation with several of the Sections. The Oral Health Group has elected the following officers for the coming year: Richard W. Leonard, D.D.S., Chief, Division of Oral Hygiene, Maryland Department of Health, Baltimore, *Chairman;* and J. M. Wisan, D.D.S., Dental Health Consultant, New Jersey Department of Health, Trenton, *Secretary.*

PENNSYLVANIA PUBLIC HEALTH ASSOCIATION

NEW officers elected by the Pennsylvania Public Health Association, on October 18, in Pittsburgh, Pa., are:

President, Harold F. Keller, Philadelphia

President-elect, Dr. Paul A. Keeney, Harrisburg

First Vice-President, Dr. Richard P. Lienhardt, Wayne

Secretary-Treasurer, C. E. Houston, Washington

Executive Board, Dr. James R. Smith, Erie; Arthur M. Dewers, Philadelphia; Dr. Henry Field Smyth, Sr., Philadelphia; Dr. J. Moore Campbell, Harrisburg, and Dr. W. W. McFarland, Pittsburgh

The 1940 meeting will be in Philadelphia.

TRI-STATE CONFERENCE OF FOOD AND HEALTH OFFICIALS

NEW officers elected by the Tri-State Conference of Food and Health Officials, on October 18, in Pittsburgh, Pa., include:

President, Dr. Reece M. Pedicord, Wheeling, W. Va.
Vice-President, Elmer E. Harter, Harrisburgh, Pa.
Second Vice-President, Charles M. McDonald, Akron, Ohio
Third Vice-President, Howard Patton, Pittsburgh, Pa.
Secretary-Treasurer, Thomas W. Henderson, Washington, Pa.

The winter conference will be held in Pittsburgh, in January, 1940.

STATE DIRECTORS OF LOCAL HEALTH SERVICE

THE initial meeting of the newly organized Conference of State Directors of Local Health Service was held in Pittsburgh, Pa., on October 16, at the time of the American Public Health Association annual meeting.

The Conference was organized with Dr. John Williams, Jr., Director of the Division of Local Health Administration, Jefferson City, Mo., as Secretary, and Dr. Marvin F. Haygood, Deputy Commissioner and Director of Local Health Service, Iowa State Department of Health, Des Moines, as Chairman.

ILLINOIS DISTRICT HEALTH UNITS

IT is announced by the Illinois State Department of Public Health, Springfield, that 19 district health units have been established, with another in prospect, rounding out the permanent working machinery of the department in the field.

Each unit embraces from two to seven counties, is in charge of a medical health officer who has had at least a short course in public health administration at a recognized school of public health, and has a minimum staff of a public health nurse, a sanitary engineer, and a secretary. The function of these units is to promote the development of local health services and to render local health service in areas where no local machinery is available.

EUROPEAN JOURNALS AND THE WAR

THE American Documentation Institute requests that subscribers to European chemical or other scientific journals who do not receive their copies report the matter promptly. The Cultural Relations Committee of the Institute hopes to be able to surmount such war obstacles as interrupted transportation, embargoes, and censorship, which seriously affected the progress of research during the last war. It is hoped that the principle will be established that materials of research having no relation to war shall continue to pass freely, regardless of the countries of origin or destination.

Reports with full details of where subscription was placed, name and address of subscriber, volume, date and number of last issue received, should be sent to: American Documentation Institute, Bibliofilm Service, U. S. Department of Agriculture Library, Washington, D. C.

REORGANIZATION OF LABORATORY DIRECTORS' CONFERENCE

A REORGANIZATION of the Conference of State Laboratory Directors was effected at its 19th Annual Meeting in Pittsburgh on October 16, when a Constitution and By-Laws was adopted changing the name and expanding the organization into a Conference of State and Provincial Public Health Laboratory Directors with full membership privileges limited to directors of official state and provincial public health laboratories. The committee on reorganization which proposed the constitutional changes was composed of

the following members representing laboratories widely scattered geographically throughout the United States and Canada:

E. M. Bramhall, Utah
L. F. Ey, Ohio
Mac H. McCrady, Quebec
C. A. Perry, Sc.D., Maryland
E. S. Robinson, M.D., Massachusetts
T. F. Sellers, M.D., Georgia
H. J. Shaughnessy, Ph.D., Illinois
A. B. Wadsworth, M.D., New York
Friend Lee Mickle, Sc.D., Connecticut, *Chairman.*

Associate membership was made available to the responsible assistants of directors of state and provincial laboratories and to the directors and responsible assistants in municipal and other official public health laboratories in the two countries.

In the newly adopted Constitution it is stated that the purposes and objects of the Conference shall be to promote the development, improvement, and effectiveness of public health laboratory service; to coördinate public health laboratory activities; to stimulate the interchange of experience among directors of official public health laboratories; to develop and maintain adequate standards for the professional training of public health laboratory personnel; to encourage constant effort toward the improvement and standardization of technical methods; to collect and make accessible to all persons in official administrative positions in public health laboratories such information and data as might be of assistance to them in the proper fulfillment of their duties.

It is proposed in the By-Laws that the Conference continue to meet annually at the place of the Annual Meeting of the American Public Health Association and on the day preceding the opening date. Scientific and business meetings open to the entire membership have been provided for, as well as executive sessions limited to full members for action on matters of policy affecting state or provincial public health laboratories. The Conference will continue issuing annually a mimeographed volume of Proceedings which will be furnished to members and sold to other interested persons as in the past.

The officers and councillors elected for 1939–1940, all directors of state laboratories, are:

Chairman, Friend Lee Mickle. Sc.D., Connecticut

Vice-Chairman, L. F. Ey, Ohio

Secretary-Treasurer, Katherine E. Cox, West Virginia

Councilors, T. F. Sellers, M.D., Georgia; E. S. Robinson, M.D., Massachusetts

ALCOHOLISM

A BROAD program for attacking the disease of alcoholism and the alcoholic psychoses, based on research, was approved by the newly elected executive committee of the Research Council on Problems of Alcohol, an associated society of the American Association for the Advancement of Science, according to an announcement by the committee's chairman, Dr. Karl M. Bowman, Director of Psychiatry, Bellevue Hospital, New York, N. Y.

Dr. Bowman also announced three grants of financial aid to the organization. The Carnegie Corporation has appropriated $25,000 for a critical survey of all work done to date on the effects of alcohol upon the individual, a project sponsored by the Department of Psychiatry of the College of Medicine, New York University. It is under the supervision of Dr. Norman Jolliffe, Associate Professor of Medicine at New York University, who recently directed a survey of alcoholism and the alcoholic psychoses in Europe.

Through the Council, the American Philosophical Society is financing a study of the toxic factors in alcoholism, conducted at the New York Psychiatric

Institute under the direction of Dr. George A. Jervis. In addition, the Dazian Foundation for Medical Research has granted funds through the Council for research on the rôle of alcohol in liver cirrhosis, a project being initiated by the College of Medicine at New York University. Some 200 patients with liver cirrhosis will be subjected to clinical, chemical, and pathological study in an effort to reach a clearer understanding of the relation of alcohol to this disease.

With these three studies inaugurated, the Research Council on Problems of Alcohol has now decided to concentrate upon alcoholism until the end of 1941. Three major measures will be employed: (1) the evaluation and coördination of existing research; (2) the development of a research program along lines inadequately investigated or not yet explored, and (3) the dissemination of the results of such research.

PERSONALS

Central States

DR. FRED T. ANDREWS, formerly of Kalamazoo, Mich., has been selected as Health Officer for Bay County, effective October 9.

DR. CYRIL V. BLACK, of Pratt, Kans., has been appointed Health Officer of Pratt, Kans., filling the unexpired term of the late DR. CHARLES E. PHILLIPS.

JAMES A. DOLCE, M.D.,† former Assistant Director of the Allegan County Health Department and County Health Officer of Allegan County, Mich., has been appointed Acting Director of the Sanilac County, Mich., Health Department, during the absence of DR. L. D. GASTON.

DR. GEORGE J. FRAZIER, of Gregory, S. Dak., was presented with the 1939 achievement medal by the Indian Council Fire at a meeting in Chicago held September 22. Dr. Frazier has been in the Indian Service for 25 years and at present serves among the Sioux of South Dakota.

CLIFTON HALL, M.D., M.P.H.,† is serving as Acting Director of the Mecosta-Osceola, Mich., Health Department during the absence of DR. M. C. IGLOE, who is at Johns Hopkins. Dr. Hall was formerly in charge of tuberculosis control activities in the Kansas State Board of Health.

EDWARD G. MCGAVRAN, M.D.,† of Hillsdale, Mich., has resigned as Director of the Hillsdale County Department of Health, to devote his time to research.

ROBERT V. SCHULTZ, M.D.,† Fellow in Public Health Education with the W. K. Kellogg Foundation, Battle Creek, Mich., has been awarded The New York Academy of Medicine Fellowship granted by the Rockefeller Foundation for the study and critical evaluation of medical education methods over the radio.

DR. EDWIN O. SQUIRE has been appointed Health Officer for the Coffeyville, Kans., Board of Health.

HENRY F. VAUGHAN, D.P.H.,* Commissioner of Health of Detroit, Mich., has been elected President of the Michigan Public Health Association.

Eastern States

DR. HOWARD S. ALLEN has been appointed Health Officer of Woodbury, Conn., succeeding DR. FRANK REICHENBACH.

DR. HOMER C. ASHLEY, of New Hartford, Conn., has been appointed Health Officer of Barkhamsted, Conn., filling the vacancy caused by the resignation of MARSHALL CASE.

DR. WILLIAM T. DAVIS, of Scranton, Pa., has been appointed Medical Director of Lackawanna County, succeeding DR. JOHN J. BENDICK, of Olyphant.

* Fellow A.P.H.A.
† Member A.P.H.A.

DR. EZRA POPE DICKINSON, of St. Michael, Pa., has been appointed Medical Director of Cambria County, succeeding DR. JAMES J. O'CONNOR, of Barnesboro.

DR. NORMAN H. GARDNER has been appointed Health Officer of East Hampton, Conn., succeeding DR. JOHN D. MILBURN, resigned.

DR. WILLIAM L. HIGGINS, of South Coventry, has been appointed Health Officer of Columbia, Conn.

ALFRED KORACH, M.D.,† of Cambridge, Mass., where he has been associated with the Department of Biology and Public Health of the Massachusetts Institute of Technology as a visiting lecturer in public health administration, has now joined the Department of Preventive Medicine of the University of Cincinnati College of Medicine, as a lecturer on preventive medicine.

DR. DANIEL E. SHEA, formerly Director of the Bureau of Venereal Diseases of the Hartford, Conn., Department of Health on a part-time basis, has been appointed full-time Director of the Bureau.

Southern States

THOMAS H. BLAKE, M.D.,† Director of County Health Work of the West Virginia State Health Department, has resigned to enter private practice at St. Albans.

ROBERT E. BONDY, Director of Disaster Relief of the American Red Cross, has been appointed Director of Public Welfare of the District of Columbia.

JOHN F. CADDEN, M.D.,† of South Charleston, W. Va., Director of the Bureau of Industrial Hygiene of the West Virginia State Department of Health, has resigned, to become Medical Director of the plant of the American Viscose Corporation at Roanoke, Va.

DR. JOE DORROUGH, of Haileyville, Okla., has been appointed Health Superintendent of Pittsburg County.

DR. WELDON K. HAYNIE, of Durant, Okla., has been appointed Health Superintendent of Bryan County.

JOHN F. KENDRICK, M.D.,† of Raleigh, N. C., has been assigned temporarily by the International Health Division of the Rockefeller Foundation to direct the Stanley County project in health education in public schools that has been chosen by the State Board of Health and the State Board of Education as the first of a program to be financed by a $50,000 grant from the Foundation.

DR. JOHN A. MORROW, of Sallisaw, Okla., has been appointed Deputy Health Commissioner of the Oklahoma State Health Department.

DR. BRUCE H. POLLOCK, M.D.,* of Point Pleasant, W. Va., has been appointed Director of County Health Work of the West Virginia State Health Department, succeeding THOMAS H. BLAKE, M.D.,† resigned.

DR. CHARLES N. SCOTT, Director of the Bureau of Venereal Disease of the West Virginia State Health Department, has accepted a position as Medical Director of the plant of the American Viscose Corporation at Nitro, W. Va.

Western States

ALVIN R. CLAUSER, M.D.,† of Los Lunas, N. M., has been appointed Deputy District Health Officer for New Mexico Health District No. 8, in the absence of DR. W. DRUMMOND RADCLIFFE who is attending Johns Hopkins University for a year in public health administration.

LYMAN C. DURYEA, M.D., C.P.H., who recently returned from Honolulu, has been appointed Director of the New York City Commission for the Study

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* Fellow A.P.H.A.
† Member A.P.H.A.

of Crippled Children, succeeding Vernon W. Lippard, M.D.

FLORENCE FISHER has been appointed Acting Director of Public Health Nursing in the Department of Public Health during the absence of MRS. FANNIE T. WARNCKE,† who is taking a course in public health nursing at Columbia University.

HELEN JAMES MCMILLAN † has resigned as Consultant Nurse in the Division of Public Health Nursing of the New Mexico Department of Public Health, effective October 1.

DR. EDWIN E. MCNIEL, of Honolulu, has been appointed Director of the Bureau of Mental Hygiene and in charge of the Mental Hygiene Clinic under the Board of Health in Hawaii.

ROLLO J. SHALE, M.D., M.S.P.H.,† formerly Health Officer of Weld County, Colo., has been appointed Health Officer of Ontonagon and Baraga Counties, Mich. He succeeds PEARL A. TOIVONEN, M.D.,† who recently married Dr. Niilo E. Leppo, a Rockefeller Foundation fellow from Finland in this country.

DEATHS

DR. LIVINGSTON FARRAND,* president emeritus of Cornell University, died November 8, at the age of 72.‡ He became a member of the American Public Health Association in 1910 and a Fellow in 1922. He was Treasurer of the Association in 1913, on the Governing Council 1915–1918, 1926–1929, and 1930–1933. He served as Editor of the *American Journal of Public Health* in 1912 and 1913, and as one of the Advisory Editors from 1914 to 1916.

DR. ALLEN J. HRUBY,† Secretary and Trustee of the Chicago Municipal Tuberculosis Sanitarium, died November 18, at the age of 49.

DR. RICARDO JORGE, delegate from Portugal on the Comité Permanent de l'Office International d'Hygiène Publique, died recently. He wrote on many subjects, but notably on plague, yellow fever, cholera, typhus, smallpox, and la grippe. He is perhaps best known in this country through his coining of the word "peste selvatique," which Dr. Karl Meyer has put into use as "sylvatic" plague. Dr. Jorge first brought it to us in the publication "Rongeurs et puces dans la conservation et la transmission de la peste" (Rodents and Fleas in the Conservation and Transmission of Bubonic Plague). Dr. Jorge was 81 years of age.

CHARLES R. TYLER,† Bacteriologist in charge of the Diagnosis Laboratory of the New York City Department of Health, died recently, at the age of 59.

‡ See also page 1353.

* Fellow A.P.H.A.
† Member A.P.H.A.

CONFERENCES AND DATES

American Association for the Advancement of Science. Annual Meeting—Columbus, Ohio, December 27, 1939–January 2, 1940.

American Association of Schools of Social Work. Washington, D. C. January, 1940.

American Congress on Industrial Health. Chicago, Ill. January 15–16, 1940.

American Medical Association—91st Annual Meeting. New York, N. Y. June 10–14, 1940.

American Public Welfare Association. Round Table and Annual Meeting. Washington, D. C. December 6–10.

American Scientific Congress—8th. In connection with celebration of 50th Anniversary of founding of the Pan American Union. Washington, D. C. May 10–18, 1940.

American Society of Civil Engineers. Annual Meeting. New York, N. Y. January 17–19, 1940.

American Statistical Association—Annual Meeting. Philadelphia, Pa. December 27–30.

American Student Health Association. Annual Meeting. Hotel New Yorker, New York, N. Y. December 28–29.

American Water Works Association: New York City Section. Hotel Commodore. December 28.

Canadian Public Health Association. Eight Annual Christmas Meeting of the Laboratory Section. Royal York Hotel, Toronto, Ont., Can. December 18–19.

Convention for the Revision of the Pharmacopoeia of the United States. Washington, D. C. May 14, 1940.

Florida Public Health Association. Jacksonville, Fla. December 7–9.

International College of Surgeons—United States Chapter. 4th Annual Assembly. Venice, Fla. February 11–14, 1940.

International Heating and Ventilating Exposition—Sixth. Under auspices of the American Society of Heating and Ventilating Engineers, and coinciding with its 46th Annual Meeting. Lakeside Hall, Cleveland, Ohio. January 22–26, 1940.

Massachusetts Public Health Association. Golden Anniversary Meeting. January 25, 1940. Boston, Mass.

Michigan Public Health Association. Detroit, Mich. October, 1940.

Mississippi Public Health Association. Jackson, Miss. December 6–8.

National Association of Housing Officials. New Orleans, La. December 6–8.

National Public Housing Conference. Washington, D. C. January 26–28, 1940.

National Social Hygiene Day—4th Annual Observance. February 1, 1940.

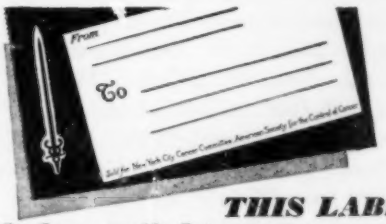
National Warm Air Heating and Air Conditioning Association. Cleveland, Ohio. January 22–26, 1940.

Pan American Union. Celebration of the Fiftieth Anniversary. Washington, D. C. April 14, 1940.

Society of American Bacteriologists. New Haven, Conn. December 28–30.

Southern California Public Health Association. Long Beach, Calif. January 24, 1940.

White House Conference on Children in a Democracy. Washington, D. C. January 18–20, 1940.



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METHODS FOR QUANTITATIVE ESTIMATION OF THE VITAMINS

III. Measurement of Vitamin A Activity

● It was early recognized that vitamin A deprivation in animals resulted in cessation of growth or—if long continued—in the appearance of a characteristic eye condition known as xerophthalmia (1). These two pathologic effects were both utilized in the first methods proposed for quantitative estimation of this essential food factor.

The earliest techniques for determination of vitamin A were similar in that they all first provided for depletion of the body stores of vitamin A of the rat by restriction of the animals to basal rations free from or quite deficient in the vitamin. In the "rat growth" method, the vitamin A activity of the material under assay was estimated by feeding graded dosages to animals depleted of the vitamin (as gauged by cessation of growth) and recording the ensuing growth response (2). In the "curative technique," the incidence of xerophthalmia served as the criterion of vitamin A depletion (3), and vitamin A activity was estimated by determining the dosage of the test material necessary to establish cure of xerophthalmia.

Techniques were also gradually developed which in some instances embodied features of both the growth and curative methods. Still another technique based on the continuous appearance of cornified epithelial cells in vaginal smears—a further characteristic of vitamin A deficiency in female rats—was evolved (4). Further research showed that colorimetric and spectrographic methods may be adapted to the estimation of vitamin A activities of specific materials (5).

Of all methods for estimation of vitamin A in foods, the rat growth technique appears to be favored today (6). Gradual improvements and refinements—as well as recognition of the existence of provitamins A—have led to development of the growth method now included in the U. S. Pharmacopeia XI. This method requires that young rats weighing 40 to 50 grams (at an age not exceeding 28 days when placed on a vitamin A deficient ration) shall manifest symptoms characteristic of vitamin A deficiency within a period of 25 to 45 days. Rats properly depleted of vitamin A reserve are assembled in negative control groups receiving no supplement, reference groups receiving graded doses of the standard reference material, and assay groups receiving graded doses of the assay material. During the ensuing period of not less than 28 days, the test animals are fed daily doses of the proper supplements. The body weights of the animals are recorded at frequent intervals during and at the end of the assay period. From the average gains in body weight of rats in the assay and reference groups, dosages of assay and reference materials, and the vitamin A activity of the standard of reference, the vitamin A activity of the assay material is calculated.

Many researches (7) have established that commercial canning procedures are without significant effect upon either the provitamins A or vitamin A in foods. Consequently, the canned varieties of foods noted for their vitamin A activities provide valuable, convenient and economical sources of this dietary essential.

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The Seal of Acceptance denotes that the statements in this advertisement are acceptable to the Council on Foods of the American Medical Association.